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MILWAUKEE, JULY, 1884.

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EVERY **PIECE—FOOT—THREAD** **WARRANTED**
—YARD—INCH—MESH—
NOYE BOLTING CLOTH DUFOR

The Noye Cloth is made expressly for our own use by C. Schindler-Escher, Zurich, Switzerland, and is the only cloth in the world which can be recognized by the **COLORED THREADS IN THE SELVEDGE**, thereby enabling us to guarantee the different qualities, and the purchaser to know what he is getting every time. This exclusive privilege is insured to us by letters trade mark.

One Green Thread Indicates Standard Quality.
One Red Thread Indicates Extra Quality.
Two Red Threads Indicate Double Extra Quality.

All these qualities are made BEFORE the piece is woven and not by mechanical means afterwards.

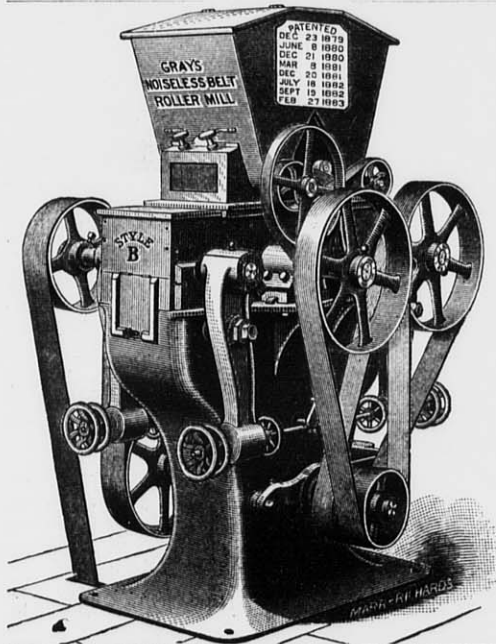
Numberless attempts have been made to palm off inferior grades of cloth for *Dufour*, but up to the present time all such efforts have signally failed. We have handled this silk since its first introduction into this country, and in purchasing of us millers can rely upon getting

THE GENUINE DUFOR.

It is particularly noted for its superior qualities in the way of **STRENGTH, ELASTICITY, UNIFORMITY IN MESH, REGULARITY OF THREADS**, and freedom in bolting under all temperatures

CLOTHS MADE UP IN A SUPERIOR MANNER BY PATENTED MACHINERY.

THE JOHN T. NOYE MANUFACTURING CO., BUFFALO, N. Y., U. S. A.



GRAY'S NOISELESS BELT
ROLLER MILLS.

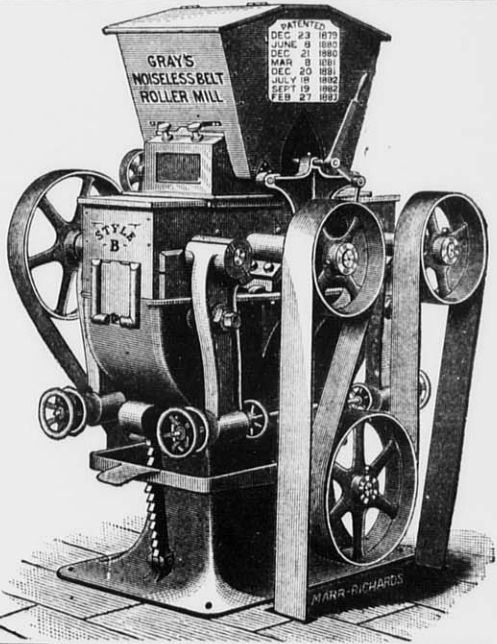
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FOR SMALL MILLS.

Send for Circulars and Prices.

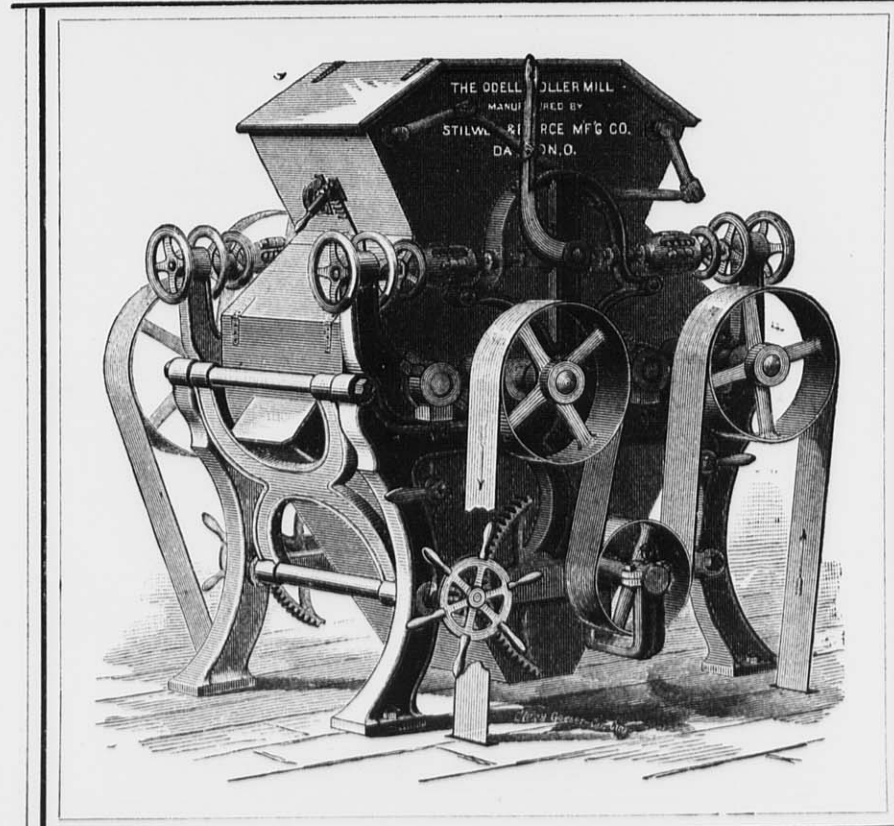
E. P. ALLIS & CO.,
Sole Manufacturers.

Reliance Works, Milwaukee, Wis.



ODELL'S ROLLER MILL SYSTEM.

Is now in successful operation in a large number of mills, both large and small, on hard and soft wheat, and is meeting with Unparalleled Success. All the mills now running on this system are doing very fine and close work, and we are in receipt of the most flattering letters from millers. References and letters of introduction to parties using the Odell Rolls and System, will be furnished on application to all who desire to investigate.



ODELL'S ROLLER MILL,

Invented and Patented by **U. H. ODELL**, the builder of several of the largest and best Gradual Reduction Flour Mills in the country.

AN ESTABLISHED SUCCESS

WE INVITE PARTICULAR ATTENTION TO THE FOLLOWING

POINTS OF SUPERIORITY

possessed by the Odell Roller Mill over all competitors, all of which are broadly covered by patents, and cannot be used on any other machine.

1. It is driven entirely with belts, which are so arranged as to be equivalent to giving each of the four rolls a separate driving-belt from the power shaft, thus obtaining a *positive differential motion* which cannot be had with short belts.
2. It is the only Roller Mill in market which *can instantly be stopped without throwing off the driving-belt*, or that has adequate tightener devices for taking up the stretch of the driving-belts.
3. It is the only Roller Mill in which *one movement of a hand-lever spreads the rolls apart and shuts off the feed at the same time*. The reverse movement of this lever brings the rolls back again exactly into working position and *at the same time turns on the feed*.
4. It is the only Roller Mill in which the movable roll-bearings may be adjusted to and from the stationary roll-bearings *without disturbing the tension-spring*.
5. Our Corrugation is a decided advance over all others. It produces a more even granulation, *more middlings of uniform shape and size, and cleans the bran better*.

We use none but the BEST ANSONIA ROLLS.

OUR CORRUGATION DIFFERS FROM ALL OTHERS, AND PRODUCES

LESS BREAK FLOUR and MIDDINGS of BETTER QUALITY.

Mill owners adopting our Roller Mills will have the benefit of Mr. Odell's advice, and long experience in arranging mills. Can furnish machines on Short Notice. For further information, apply in person or by letter to the sole manufacturers,

STILWELL & BIERCE MANUFACTURING CO.,

Agents for Du Four's Bolting Cloth.

[Please mention this paper when you write to us.]

DAYTON, OHIO, U. S. A.

The Largest Mill Furnishing Establishment in the World.

RELIANCE WORKS,
EDW. P. ALLIS & CO., Proprietors.

MILWAUKEE, WIS., U. S. A.

SOLE MANUFACTURERS OF

GRAY'S PATENT

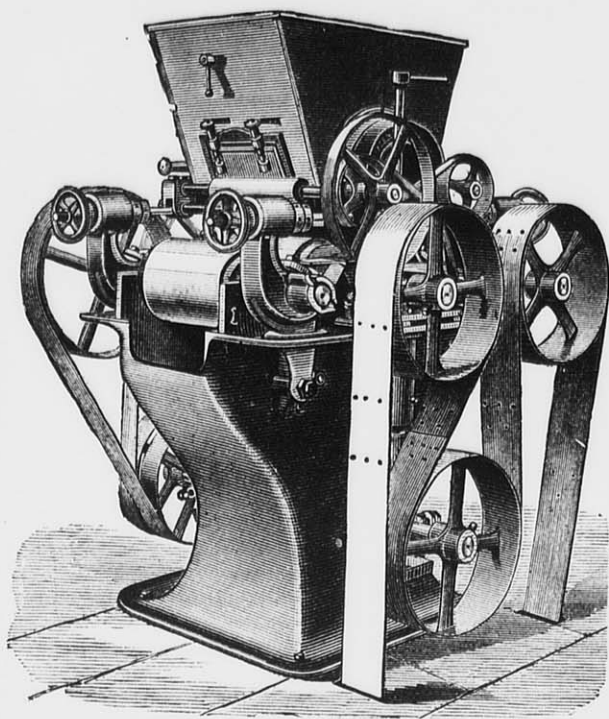
Noiseless Belt Roller Mills

WITH

Wegmann's Patent Porcelain Rolls.

Unexcelled for reducing Middlings to Flour.

Far ahead of Smooth Iron or Scratch Rolls and entirely superseding the use of Mill Stones for this purpose.



Read the Following Letters.

Terre Haute, Ind., Aug. 22nd, 1882.

MESSRS. E. P. ALLIS & Co., Milwaukee, Wis.

Gentlemen:—We are very much pleased with the whole eight set of Porcelain Rolls you put in our Mill. The two double sets sent us soon after starting up our mill last fall, we put in place of two run of stones for grinding our coarse Middlings.

We find the Flour from the Porcelain Rolls much more evenly granulated and much sharper and cleaner than that we got from the stones, besides the second or fine Middlings are much better, being almost entirely free from germs and not as specky.

Yours Truly,

KIDDER BROS.

Kings County Flour Mills, Brooklyn, N. Y., Aug. 15, 1882.

MESSRS. E. P. ALLIS & Co.

Gentlemen:—You ask how I like the Porcelain Rolls as compared with Mill Stones. I have been using the original Porcelain Gear Machines for five years and became convinced a long time ago that Mill Stones could not produce as satisfactory results.

I am now operating your Improved Machine of increased size with nice adjustments, working without noise with Gray's Patent Belt Drive. The Flour it produces is beautifully grainy and strong, and its capacity two or three times more than the old Gear Machine.

It runs splendidly, gives no trouble, consumes less power than Mill Stones, dispenses with costly stone dressing and for reducing middlings and soft branny residuums and tailings is unequaled by any Machine, iron or stone, at least this is my opinion after five years of practical experience.

Yours truly,

JOHN HARVEY,

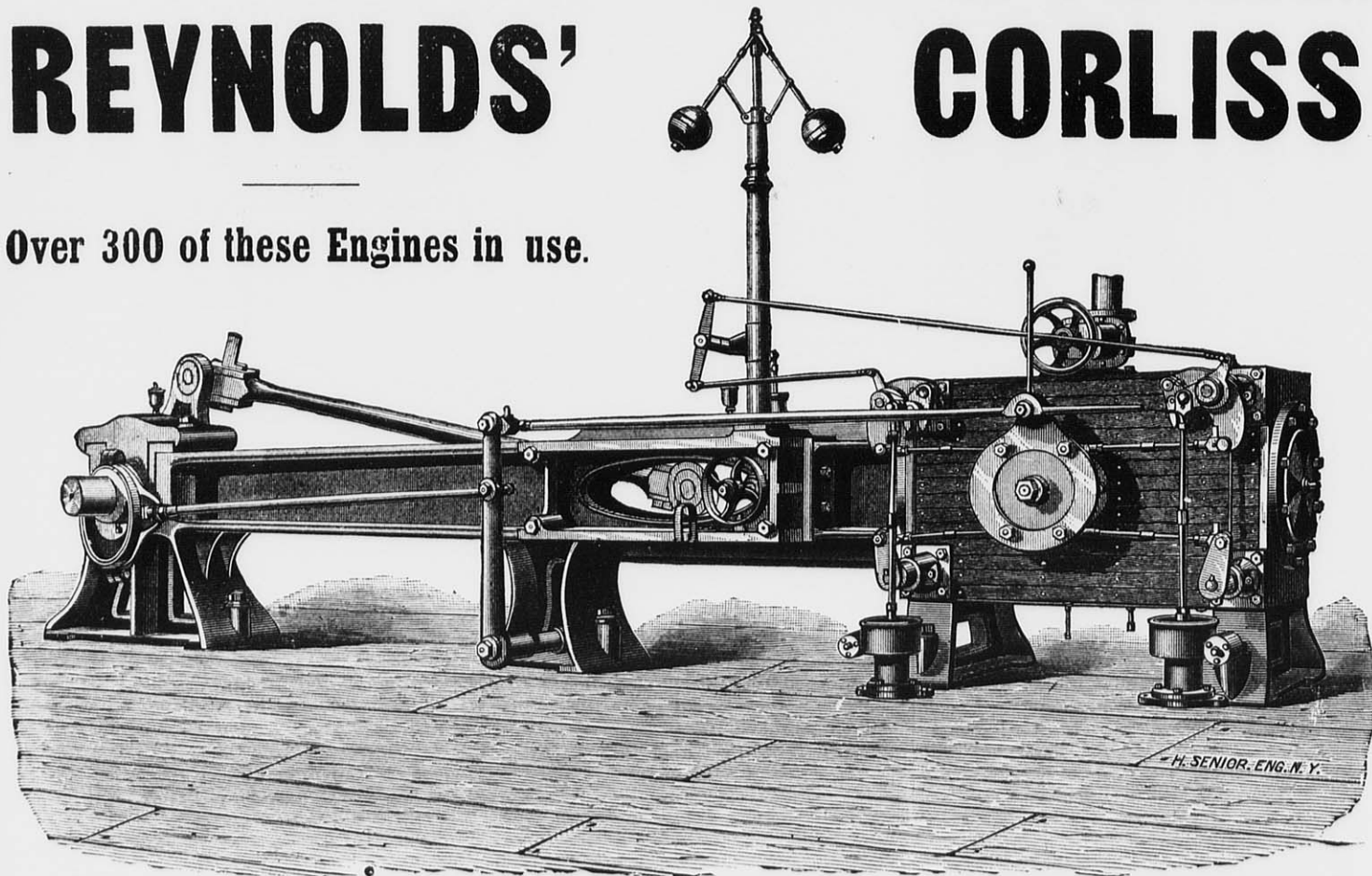
Head Miller Kings Co. Mills, Brooklyn, N. Y.

ALSO SOLE MANUFACTURERS OF THE CELEBRATED

REYNOLDS'

CORLISS ENGINE.

Over 300 of these Engines in use.



These Engines are especially adapted for use in Flouring Mills—being unsurpassed in Simplicity, Durability and ECONOMY OF FUEL, and far ahead of any other

Automatic Cut-off Engines.

Send for catalogues of Roller Mills, Flour Mill Machinery, Saw Mill Machinery, Reynolds' Corliss Engines, etc., etc. Address:

Edw. P. Allis & Co.,

MILWAUKEE, WIS.

The following is a partial list of Flouring Mill owners who are using the Reynolds' Corliss Engines.

J. B. A. Kern.....	Milwaukee, Wis.	Albert Wehausen.....	Two Rivers, Wis.	L. H. Lanier & Son ..	Nashville, Tenn.
LaGrange Mill Co.....	Red Wing, Minn.	Green & Gold.....	Faribault, Minn.	Wells & Nieman.....	Schuyler, Neb.
New Era Mills.....	Milwaukee, Wis.	Meriden Mill Co.....	Meriden, Minn.	Grundy Centre Milling Co.....	Grundy Centre, Iowa.
Daisy Flour Mills.....	Milwaukee, Wis.	Townshend & Proctor.....	Stillwater, Minn.	B. D. Sprague.....	Rushford, Minn.
Winona Mill Co.....	Winona, Minn.	Sooy & Brinkman.....	Great Bend, Kansas.	The Eisenmeyer Co.....	Little Rock, Ark.
W. D. Washburn & Co.....	Anoka, Minn.	Frank Clark.....	Hamilton, Mo.	A. W. Ogilvie & Co.....	Montreal, Canada.
Archibald, Schurmeier & Smith.....	St. Paul, Minn.	N. J. Sisson.....	Mankato, Minn.	Geo. Urban & Son.....	Buffalo, N. Y.
White, Listman & Co.....	La Crosse, Wis.	Jas. Campbell.....	Mannannah, Minn.	A. A. Taylor.....	Toledo, O.
Milwaukee Milling Co.....	Milwaukee, Wis.	C. J. Coggin.....	Wauconda, Ill.	Pindell Bros. Co.....	Hannibal, Mo.
Stuart & Douglas.....	Chicago, Ill.	J. J. Wilson.....	Algona, Iowa.	Kehler Milling Co.....	East St. Louis, Ill.
Stillwater Milling Co.....	Stillwater, Minn.	Ames & Hurlbut.....	Hutchinson, Minn.	Walsh, DeRoo & Co.....	Holland, Mich.
Otto Troost.....	Winona, Minn.	Lincoln Bros.....	Olivia, Minn.	Goodlander Mill and Elevator Co.....	Fort Scott, Kan.
E. T. Archibald & Co.....	Dundas, Minn.	Northey Bros.....	Columbus Junction, Iowa.	W. Seyk & Co.....	Kewaunee, Wis.
C. McCreary & Co.....	Sacramento, Cal.	Bryant Mill Co.....	Bryant, Iowa.	Topeka Mill and Elevator Co.....	Topeka, Kan.
Gardner & Mairs.....	Hastings, Minn.	David Kepford.....	Grundy Centre, Iowa.	Strong Bros.....	Graceville, Minn.
J. Schuette & Bro.....	Manitowoc, Wis.	Waterbury & Wagner.....	Janesville, Minn.	C. A. Roberts.....	Fargo, D. T.
Minnetonka Mill Co.....	Minnetonka, Minn.	W. A. Weatherhead.....	South Lyons, Mich.	Coman & Morrison.....	Fox Lake, Wis.
J. D. Green & Co.....	Faribault, Minn.	Geo. Bierline.....	Waconia, Minn.	J. G. Schaapp.....	Grand Island, Mich.
F. Goodnow & Co.....	Salina, Kansas.	James McCafferty.....	Burton, Mo.	Fred. Schumacher.....	Akron, Ohio.
A. L. Hill.....	Faribault, Minn.	Geo. P. Kehr.....	Menomonee Falls, Wis.	Warren Mfg Co.....	Warren, Minn.
Beynon & Maes.....	Owatonna, Minn.	Winona Mill Co. compounding their present 24x60 Winona M.			
Eagle Mill Co.....	New Ulm, Minn.	Forest Mill Co.....	Forest, Minn.		

The United States MILLER

Published by
E. HARRISON CAWKER. { VOL. 17, NO. 3. }

MILWAUKEE, JULY 1884.

{Terms: \$1.00 a Year in Advance.
Single Copies, 10 Cents.}

A REVOLUTION IN WHEAT CLEANING.

The illustration shows the CURTIS & HELFRICH GRAIN CLEANER, the latest, and in the opinion of millers and elevator men, the best wheat cleaning machine ever placed on the market. It was invented at Minneapolis, the world's center for milling, by practical men. Mr. Helfrich is a successful head miller, and this machine is the result of a long course of practical experiments in one of the leading flour mills of that city. The wheat is beaten with direct blows while it is suspended in the air and surrounded by an air current. Instead of being packed closely together in a confined space and then rubbed, as in friction machines, the kernels are separated and kept constantly flying to and fro in the air. The blows are given by beaters mounted upon a series of revolving shafts working within a perfectly smooth, perforated steel shell, of peculiar shape.

The three shafts, as shown in the engraving, armed with beaters, all revolve at high speed and in opposite directions. The beaters interlap, thus causing thousands of conflicting blows. The grain is driven back and forth from one beater to another in a perfect tempest and the fine fluffy material that lodges in the crease, in the ends, and in the pores of the hull, is beaten out in much the same way that the dirt is removed from a coat by whipping it. As fast as the dirt is removed it is driven through the perforations and carried off by the suction. Working on this novel and simple principle very little power is required for an astonishing amount of cleaning. Those who have tested the machine say it will remove more of the fine fluffy material on the outside of the berry at one operation than can be done with a friction machine at three or four, and with less power. What is more important is that there is no waste of wheat nor injury to the hull. The bran on the berry is left in beautiful milling condition, as seen under the glass, while the brush on the ends of the kernels is removed and the crease thoroughly cleaned out.

The severest test to which a cleaner can be put is that of cleaning smutty wheat, and it appears by the testimony of elevator men that this one is achieving a remarkable success in that important branch of the business. The pollen from a broken smut ball is as fine and penetrating as that from a puff ball, and when smeared over the berry it will stick like grease upon a person's hand. But the wheat men of Minneapolis have shown samples of such wheat so thoroughly cleaned on this machine that it is almost impossible to believe that it could be the same grain.

Equally important in the eyes of millers are the facts that the berry is not injured and that the machine is simple and durable. There are no rough corrugated surfaces against which the wheat is thrown or rubbed. The inside of it is perfectly smooth, and as the work is done by tossing the kernels to and fro between the beaters, its efficiency is not impaired no matter how long it is used. The beaters will strike blows so long as there is anything left, and there is no wear out to the machine. It is very simple in construction, with no fine parts to break or get out of order. Everything is heavy and strong. C. A. Pillsbury & Co., the largest flour manufacturers in the world, already have four of the machines in use, and they are giving entire satisfaction. For further particulars we refer our readers to the manufacturer, Mr. F. E. Curtis, Windom Block, Minneapolis, Minn.

SUFFICIENT POWER.

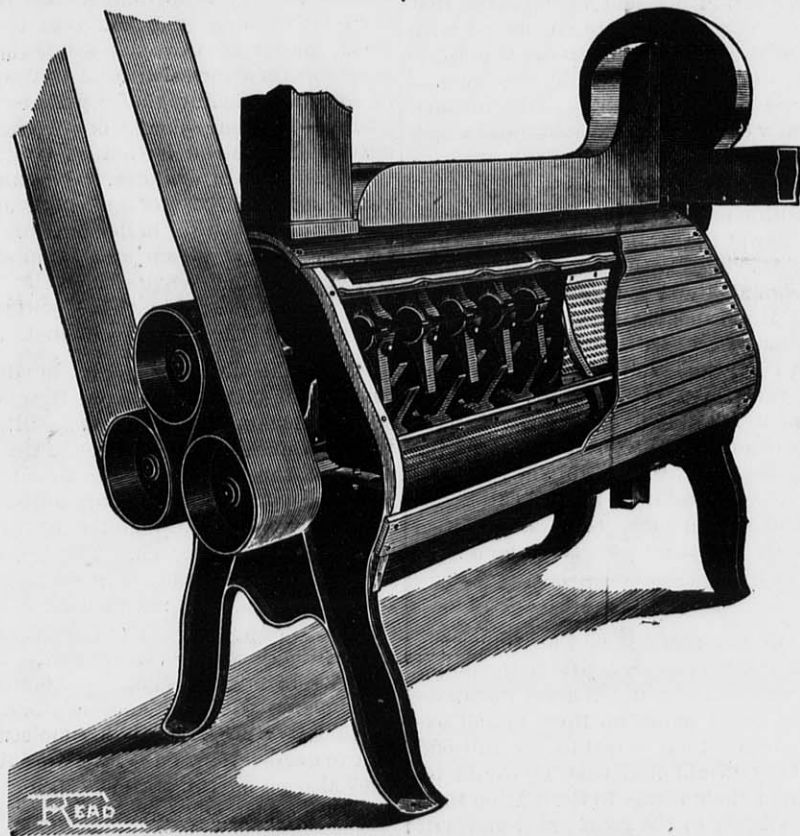
Many a mill-builder carries out a principle of false economy when he places the boilers and engine in his establishment. A weak man cannot lift a heavy weight; a small horse cannot pull a heavy load; yet there are men, and plenty of them, who seem to think that a small engine is capable of driving heavy machinery. Too often machinery salesmen do much to induce men to believe this. Knowing the disposition of the majority of men to build as cheaply as possible, these salesmen argue that a small engine will

do the work satisfactorily. "I want to cut from 40,000 to 50,000 feet of lumber a day," says the lumber manufacturer. "Oh, well," says the salesman, "this engine will do it." Probably it will do it. With easy feed the saw is driven through the log in a manner that cannot be complained of. But by and by there comes a time when there is need to hurry. Advantage is wanted to be taken of a good market, there is a big order to fill, or something of that kind, and the brake is taken off. The time has come to push things, but it is discovered, when it is too late, that there is no pusher. The little engine struggles, but with all its struggling the saw does not "walk" through the log. This, above all things, makes a saw-mill man nervous, if not mad. He is anxious to see his mill go at a 2:40 gait, but it doesn't come under the wire in less than four minutes. As he is his own driver he knows there has been no "pulling," and must settle down to the conclusion that the whole fault is with the steed.

An engine should be of sufficient power to drive the mill to its maximum capacity, and

vexations of the saw-mill business are many. The speed of the saw was not uniform enough to produce good lumber. He bore the taunts of his neighbors that he could not raise the broom over his ridge-pole. There are unprofitable delays. The old engine has to be sold at a heavy discount, for the dealers in second-hand machinery are like those in second-hand clothing—they generally buy their goods for less than they are worth and sell them for more than they are worth. For the new engine there must be a stronger foundation put, and altogether the string of perplexities and expenses is a long one.

It is impossible for a man who builds a mill to know beforehand how hard it will be necessary to drive it. If the price of lumber jumps up suddenly, he will feel like putting on all the steam and feed possible. And even beyond this something is liable to turn up. It may be found desirable to attach a planer, or some other machinery, and if it is, it will be necessary to have enough power to run it in connection with the saw. To increase the capacity of a mill is an almost every-day oc-



THE HELFRICH-CURTIS GRAIN-CLEANER.

that easily. An overworked engine complains as loudly as an overworked man. It speaks plainly for relief at every stroke. It says in language that cannot be misunderstood: "You can work me thus hard, of course, if you choose, but though I am made of iron and steel, I cannot endure everything, and if you don't let up you will have to call in a physician." The engine speaks the truth. The strain and friction go on, and the engine gets sick. It has simply worked itself sick. The physician comes in, and, at considerable expense, doctors it up. Parts are replaced, and everything is again put in good shape. The engine is again well, but is no more infallible than it was before. The same cause produces the same effect. Overwork again prostrates it. A consultation is held, and it is decided that the engine must go. It is set one side, and then the manufacturer of it hears that his engine that was put in at such and such a place has been replaced. It would not do the work, consequently it must be a poor engine. Other manufacturers make capital out of it, slyly wink, and adroitly infer that the engine must be poor. The fact is, it is probable that the engine was first-class in every respect. It came out of a shop where excellent work is done and good material used. It was simply worked beyond its strength, and the manufacturers of it are not a bit to blame.

The result is damaging to the maker of the engine, and to the man who purchased it. The latter has been bothered to such an extent that he has decided that the

currence, and, oftener than otherwise, such a change necessitates a new engine or boiler.

We have heard of thousands of complaints from mill and factory men because they did not have enough power, but not one because of too much. It is safe to say that no mill man ever found fault because his engine was too large. If it is larger than he really requires he is pleased rather than otherwise. He not only has the satisfaction of seeing his machinery running easily and at a uniform rate of speed, but he knows that in case of an increased demand for the product of his mill, he will be able to meet it promptly without additional expense.

Reserve power is always desirable, at times highly profitable, and the extra cost of an engine and boiler capable of producing such power is one of the best investments a mill man can make.—Northwestern Lumberman.

TWENTY-SIXTH ANNUAL REPORT OF THE MILWAUKEE CHAMBER OF COMMERCE.

The twenty-sixth annual report of the trade and commerce of Milwaukee, for the year ending December 31, 1883, and fiscal year of the Chamber of Commerce, ending April 7, 1884, compiled for the Chamber of Commerce by its secretary, William J. Langson, was issued June 19. It is a handsome octavo pamphlet of 152 pages, and forms a valuable record of the commerce of Milwaukee for the year. Following is a very full summary of Mr. Langson's report:

The commerce, manufactures and general business of Milwaukee for the year 1883 were

visibly affected by the general commercial depression common to all parts of the country, and generally accepted as one of the unavoidable concomitants of the rapid methods of the period. Current statistics of commerce and manufactures are, therefore, regarded as a reflection of losses rather than an exhibition of gains. In this view of the situation, while Milwaukee is not an exception to the rule, we have reason to congratulate ourselves that if our progress has been slightly checked, the losses sustained have not been disastrous. In point of fact, the general business of Milwaukee has been exceptionally exempt from serious failures, and although results are generally of a negative character in comparison to the uniform prosperity to which we have been more accustomed, they afford an additional example of the substantial and conservative qualities for which the mercantile, manufacturing and financial interests of Milwaukee have so long enjoyed an unsurpassed reputation throughout the commercial world. These impressions are substantiated, to some extent at least, by a comparison of the general volume of business for a number of years as indicated by the reports of deposits furnished the Chamber of Commerce by the various banks and banking houses of Milwaukee. The aggregate of these reports presents the following exhibit:

COMPARATIVE VOLUME OF BUSINESS OF THE CITY.	
	Total Bank Deposits.
1883.....	\$556,674,318 80
1882.....	589,451,734 00
1881.....	582,299,958 00
1880.....	467,230,471 00
1879.....	435,025,197 00
1878.....	389,065,604 00
1877.....	422,162,034 00
1876.....	401,087,625 00
1875.....	448,323,027 00

Statistics of the grain trade of Milwaukee for 1883 present some encouraging features, showing an increase of the aggregate receipts of about 3,500,000 bushels, and strengthening the belief expressed in our last report that the year 1882 probably witnessed a lower record than will be known in the future wheat trade of Milwaukee. The movement of wheat was notable as marking the first increase of receipts in the last four years. The quality and condition of the last crop were more satisfactory than either of the preceding crops, and this fact has had an important bearing in restoring the confidence of buyers in the quality of Milwaukee wheat, which had been more or less impaired by the comparatively poor condition in which one or two previous crops had been harvested. The total receipts were 9,278,922 bushels; and of all kinds of grain 21,892,332 bushels. The receipts of barley show a marked increase over all previous years—showing a total of nearly 7,000,000 bushels, of which about one-third was consumed by local brewers. Milwaukee is now the leading barley market west of New York, the apparently large receipts of Chicago (8,831,899 bushels in 1883) including over 3,000,000 of Milwaukee receipts shipped east and south by rail. The production of barley is constantly increasing throughout this part of the country, and with a large local demand to supply her extensive breweries, Milwaukee will doubtless retain the leading position she has attained as a barley market. The reputation of Wisconsin and Minnesota barley, as graded by Milwaukee inspection, ranks high throughout the markets of the east.

The following statement presents a consolidated view of the receipts of all kinds of grain at Milwaukee for the last three years, and will show at a glance the gains and losses:

Bushels.	1883.	1882.	1881.
Wheat.....	9,278,922	8,958,422	10,176,098
Corn.....	2,258,862	2,037,680	946,975
Oats.....	2,836,529	2,581,808	2,217,571
Barley.....	6,899,146	5,138,818	4,583,319
Rye.....	620,873	491,006	677,148
Total grain.....	21,892,332	18,307,734	18,003,111
Flour, reduced to wheat.....	15,168,590	15,004,368	15,193,332
Total grain and flour in bus.....	37,060,922	33,402,102	33,196,443

As the area of grain production increases throughout the territory recently opened to

(CONTINUED ON PAGE 37.)

UNITED STATES MILLER.

E. HARRISON CAWKER, EDITOR.

PUBLISHED MONTHLY.

OFFICE, NOS. 116 & 118 GRAND AVENUE, MILWAUKEE.
SUBSCRIPTION PRICE—PER YEAR, IN ADVANCE.To American subscribers, postage prepaid.....\$1.00
To Canadian subscribers, postage prepaid..... 1.00
Foreign subscriptions..... 1.50
All Drafts and Post-Office Money Orders must be made payable to E. Harrison Cawker.Bills for advertising will be sent monthly, unless otherwise agreed upon.
For estimates for advertising, address the UNITED STATES MILLER.

[Entered at the Post Office at Milwaukee, Wis., as second-class matter.]

MILWAUKEE, JULY, 1884.

We respectfully request our readers when they write to persons or firms advertising in this paper, to mention that their advertisement was seen in the UNITED STATES MILLER. You will thereby oblige not only this paper, but the advertisers.

See Page 40.

Milwaukee mills are nearly all running and some of them to full capacity.

IMMIGRANTS to the number of 82,581 arrived in the United States during the month of May.

THE Government estimate of the wheat crop of 1884, issued June 11, places it at about 500,000,000 bushels.

THE venerable and highly respected United States Judge Drummond has forwarded his resignation to President Arthur, the same to take effect July 1.

C. H. Seybt, of Highland, Ill., has returned from Europe. He reports the crop prospects in nearly all parts of Europe extremely favorable.

EVERYWHERE in the northwest the growth of grass seems heavier than has been known for many years. The prospects for an exceedingly heavy crop of hay are unexceptionably good.

H. G. HILL, Esq., of Rosario, Argentine Republic, S.A., has been paying our city a visit lately, the result of which will probably be that more milling machinery will go to South America.

ASIATIC CHOLERA, brought in a steamship from Peking, has made its appearance at Toulon, France. Several fatal cases are reported, and rigid sanitary regulations have been adopted by the French authorities.

The owners of the "Roberts" patent are still agitating their claims. Milling authorities whose business it is to know, say that there is nothing in it. The trade can therefore breathe easy during this hot weather.

FROM quite recent advices from New Zealand it appears that the average crop of wheat in these islands is thirty-five bushels to the acre. Steam plows from England with American reapers and threshers are in common use.

H. G. Wilson, Esq., of the Fuel Saving Furnace Annex Co., of St. Louis, Mo., called on us recently. Mr. Wilson is now adding his annex to the Milwaukee Exposition boilers. Wisconsin steam-users will soon have a chance to see this invention in operation.

MCLEAN, of the Richmond Mfg. Co., Lockport, N. Y.; Vaughn, of Nordyke & Marmon Co., Indianapolis, Ind.; Beardslee, of the Milwaukee Dust Collector Co. of Milwaukee; J. Silas Leas, of Moline Ill.; and Thornburgh of Thornburgh & Glessner of Chicago, Ill., were all at the Minneapolis Millers' picnic.

WISCONSIN farmers are considering favorably the system of carefully capping their barley shocks and threshing the caps separately from the shocks. In this way they expect to prevent discoloration of the greater portion of the barley and consequently obtain higher prices.

The crop prospects generally continuing favorable, millers generally look for low prices for wheat and a fairly busy season in the manufacture of flour. The grass crop is immense and consequently the demand for feed-stuffs is moderate at low prices. Considerable new wheat has already reached the St. Louis market.

IN conversation with a well-known miller at Minneapolis recently, we asked the ques-

tion: Do you think that the numerous failures among flour-mill owners during the past six months, is owing to unprofitable business, or to speculation in wheat, pork, etc.? Without a moment's hesitation he replied: "My dear sir, I think that it is entirely probable that eight out of every ten failures amongst flour mill-owners may be traced directly to unwarrantable speculation."

THE Indian Wheat question is again agitating English members of Parliament; a new loan of some £10,000,000 to 15,000,000 is being considered, for the purpose of extending the railway system of India, so as to facilitate the transportation of the wheat to the seaboard. All this is worthy of consideration and study by our American wheat-growers.

Any of our readers desiring to purchase a flouring mill, will do well to read the advertisement on page 44, carefully. It is a good mill, in a first class locality with excellent shipping facilities; in three directions by water, up and down the Ohio and the Kanawha rivers. It will be a good railroad center, and the demand for flour in the mining districts to the Kanawha, is always large.

THE Farmers' Tribune (Minneapolis), says: "The average wheat-grower of the northwest is between a fever and a sweat. If he tells the truth about the growing crop the effect is likely to be to depress the market by the prospect of a large surplus; if he sacrifices conscience and gives a blue aspect to the matter, he throws cold water on the immigration boom and depresses the value of wheat lands. This is a rough world."

THE SCIENCE OF BLUNDERING.—Herbert Spencer's latest article on legislative botchwork shows that four-fifths of the acts of parliaments have to be repealed, and that all of them are ignorantly framed and proceed on vicious principles of government interference. He says: "We find on one hand, that there is scarcely one statute connected with the administration of public relief which has produced the effect designed by the Legislature, and that the majority of them have created new evils and aggravated those which they were intended to prevent."

THE editor of this journal passed a very pleasant day at the Minneapolis Miller's picnic, June 21. This was their fourth annual picnic originated and managed by the head-millers of Minneapolis, and their picnics have always been successful. We beg leave to suggest to Milwaukee millers, mill-builders and mill-furnishers, etc., that it would be a good thing to follow their example. We have just as good and even better facilities in the way of lakes, railroads, beautiful grounds, steamboats, etc., and if we try, we can take a day off and have a social time, and all feel better for it. What say you, gentlemen?

WAGON ROADS.

There are few sections of the country in which sufficient attention is paid to the building good wagon roads, and in many instances if farmers could figure up their actual expense in hauling their wheat to the railroad station, they would find that it would be greater from their farms to the station than from the station to the great grain-marts of the country. But few, if any, ever attempt to figure up this cost, which includes time, wear and tear on horses, harnesses and wagons, and always greater personal expense when on the road than when at home. Great attention has been given to building railroads, cars, locomotives, etc., so as to obtain the greatest results at a minimum of expense, and it is fully time that the public was thoroughly aroused to the importance of wagon roads that will be good at all times. Proper grading and drainage are the first great essentials, and then good gravel or macadam will do the rest. The cost to all concerned will soon be repaid by the advantages gained.

COMPLAINTS OF CANADIAN MILLERS.

A Toronto correspondent says that Ontario millers are suffering considerable loss owing to the present duties imposed by their Government on imports of wheat and flour, and that they are endeavoring to have the duty on wheat lowered. The writer says:

"Considerable competition is felt by them now from the American millers, who send their surplus flour over here and sell it for what it will fetch on the Canadian markets. If the Canadian millers bring in wheat they have to pay a duty equivalent to 75 cents a barrel, while the duty on flour is only 50 cents a barrel. Owing to the difficulty Canadian millers experience in getting sufficient wheat here to meet all demands, and the drawback in the way of getting it from the Northwest, they are obliged to import from the United States. Thus it will be seen that the American ex-

porters who send flour to Canada are in a much better position than those who produce that staple in their own country. For the past four years the millers here have been endeavoring to persuade the Canadian government to take off the tax on wheat, or at least a part of it, and place them on an equal footing to compete with the American millers. But the government has refused, and the discrimination against our own millers goes on."

THE report of the Department of Agriculture says: The exportation of wheat and flour for the fiscal year which ends June 30, will fall 25 per cent. below that of last year. The exportation of wheat will amount to no more than 75,000,000 bushels, against considerably more than 100,000,000 last year. The difference in values will be even greater than this. The average value of wheat exported during the present year is slightly lower than that of the preceding year. The work of the American millers seems to be quite satisfactory to consumers abroad, as is shown by the marked increase in the proportion of the wheat exported in the form of flour. While falling off in values of wheat exported is fully 40 per cent., the decrease in the value of flour exported is but about 10 per cent. The exportations of breadstuffs of all kinds, including the corn, oat-meal, rye, oats, etc., for the year will reach 160,000,000 against something over 200,000,000 last year. Reports from the wheat-growing section continue to be very gratifying, and it is probable that the exportations of the coming fiscal year will, should the demand abroad be good, considerably exceed those of the past year.

ITEMS OF INTEREST.

THE horse-power of a boiler, says the *American Machinist*, is a meaningless expression, because there is no agreement as to what evaporation of water shall be considered a horse-power, and hence no standard in law or practice. The expression is properly enough used by boiler makers as expressing the relative capacity of different boilers, as it is a matter of necessity for them to use some form of expression, and in the absence of something definite this is perhaps as good as any. The horse-power of an engine can only be determined by actual trial; but if the dimensions of cylinder, valves and ports, character of valve motion, speed at which the engine is to run, boiler pressure, length and diameter of steam and exhaust pipes, and use to which engine is to be put are known, the horse-power that it will satisfactorily develop can be approximated.

PROF. WM. JAGO, F. C. S., of Brighton, Eng., in his recent papers on the chemistry of bread-making, states some results of his examinations as to the relation of the various flours to this purpose. He found in the Hungarian flours the tolerably uniform ratio of the wet to the dry gluten of 3.2, an exceptional case giving 4.3. The tests of the percentage of dry gluten in certain wheats gave: Kubanka, 12.51; Saxonska, 11.29; and Duluth, 11.32 per cent. The average moisture in wheat he places at 14 per cent. The importance in bread-making of the insoluble, as compared with the soluble albuminoids, which latter are so liable by moisture and heat to degradation, was clearly pointed out. They also act on the starch, especially if its cells are broken, which point is a question of importance in the processes of grinding that ought not to break the starch granules. Mr. Jago urged the importance of technical study on bakers if they would keep abreast with the requirements of the day.

IMPROVEMENTS in ovens for public bakeries seems to be a specialty among the English bakers at present. The *British and Foreign Confectioner* briefly describes a recent invention called the "patent continuous baking oven," which presents some very valuable advantages. The ovens can be arranged singly, or one above the other, as the Dicker patent. The heat is generated in a furnace at the base, passing under and over the ovens through well-arranged flues, which equally distribute heat, and permit continuous baking. Coke is preferred for fuel; and an ordinary chimney is all that is required for smoke, etc. The greatest heat may be brought to the mouth in these ovens, or by a system of dampers can be made to heat the top or bottom, or, if to great, convey it into the chimney. The principal novelty is a traveling baking plate, on which the loaves are placed outside the oven, and are run in or out on a sort of tram, in less than half a minute. The mechanism of the door permits the perfect retention of steam as required in Vienna bread-baking, while dampers permit, if desirable, its being entirely carried away. The relative expense is not given.

THE agricultural statistics of the colony of Victoria for the year ending March 31, 1884, have been published. The wheat yield for 1883-4 is set down at 15,499,143 bushels, as

against 8,751,454 bushels in 1882-3, or an increase of no less than 6,747,689 bushels. The increase in oats as compared with the previous year was 289,271 bushels; in barley, 301,689 bushels; in peas and beans, 103,621; in potatoes, 31,519 tons; in hay 106,807 tons.

THE quickest time ever made at an elevator, says a Chicago exchange, was at Rock Island "A" a few days since. The monster ship Golden Age was at that time loaded with 95,000-bushels of corn in two hours and fifteen minutes. As rapid time has never before been made by any elevator in America.

THE steam power used by the manufacturing of the United States, by the census of 1880, was equal to 2,183,488 horse-power; the water power was equal to 1,225,379 horse-power—making in all the horse power of the United States 3,408,867. Counting one horse-power to be equal that of six men, we have in the power used in the driving of our factories in this country the equivalent of the power of 20,453,202 men. The steam power used in driving our factories not including the water power, is equivalent to the labor of 13,100,928 men; and of our 50,000,000 people only 35 per cent. are supposed to be capable of labor—in round numbers 17,500,000 laborers, persons capable of pursuing gainful occupations, in the country; and yet it would take nearly all these 17,500,000 men to furnish the force that is exercised by steam in driving the engines of our factories, the wheels, the spindles and the machinery of this country; and we do not begin to touch, even then, upon the saving of power by the use of the machines which are manufactured in these factories.

To what purpose may not glass be put? Bearings made of glass are now being experimented with in the rolling stock of railroads, in regard to their frictionless quality. This material is a hard, clear substance, and must wear down smooth and give a fine bearing surface for an axle to rest upon. It is a non-conductor of electricity if not of heat, and the fine particles have as good a chance to work down the bearing of the axle to a running fit, as in the grinding in of a valve seat for a brass valve, and much power is expected to be saved by converting the wearing of a journal into some other agency than by converting it into heat.

A FRENCH WAG.—Meissonier had a gardener who was a good botanist and a great wag. He knew the seeds of all sorts of plants, and Meissonier was always trying and always failing to puzzle him.

"I have got him now," said Meissonier to some friends at a dinner party; and he showed them a package of the roe of dried herrings. Then he sent for the gardener. All the guests smiled. The gardener arrived.

"Do you know these seeds?" Meissonier asked.

The gardener examined them with great attention. "Oh, yes," said he, at last, "that is the seed of the *polpus fluximas*, a very rare tropical plant."

A smile of triumph lighted the face of Meissonier. "How long will it take the seed to come up?" he asked.

"Fifteen days," said the gardener.

At the end of fifteen days, the guests were once more at table. After dinner the gardener was announced.

"M. Meissonier," he said, "the plants are above the ground."

"Oh, this is a little too much," said the great painter, and all went out into the garden to behold the botanical wonder.

The gardener lifted up a glass bell, under which was a little bed carefully made, and in which three rows of red herrings were sticking up their heads. The laugh was against Meissonier. He discharged the gardener, but took him back the next day.

A NEW YORK man advertises "a safe, quick and reliable corn-remover, without the application of knife or caustics; no pain experienced; price only \$1." A young man who never walks out without wishing he could leave his feet at home, forwarded \$1, and two days after received by express a live crow.

IN Swansea, Wales, during a recent bank scare an old woman drew \$450 from the savings bank and hid it in a sack. Not long after the sack became filled with wheat and was taken to the mill. Then she remembered that the gold was at the bottom of it, and rushed frantically after it, reaching the mill only in time to hear the miller profanely wondering aloud what ailed the wheat that it clogged the stones so. The machinery was stopped and all the gold recovered, though in a much battered state.

FOR SALE.

A horizontal boiler and engine in first-class condition. Boiler 15 horse power. Engine 10 horse power. Can be seen running at the RIVERSIDE PRINTING OFFICE, 116 and 118 Grand Avenue, Milwaukee. Also Feed Water Heater and line of Shafting.

(CONTINUED FROM FIRST PAGE.)

immigration by the construction of new railroads extending upwards of 700 miles westward from Milwaukee, the volume of grain moving eastward must largely increase from year to year, and a large proportion of that volume will first reach deep water at Milwaukee. The wheat production of the upper Mississippi country, which was formerly the chief source of our wheat supply, has of late years been largely drawn to supply the mills of Minneapolis, which in 1883 absorbed about 19,000,000 bushels in the manufacture of flour; and the surplus wheat product of the country along the Northern Pacific railroad naturally moves eastward via Duluth during the season of lake navigation. The receipts at the latter point in 1883 were 7,655,438 bushels. But conceding that Duluth will take the bulk of the wheat product of the Northern Pacific country, and Minneapolis that of the upper Mississippi country, there is still a vast empire of new territory adapted to every variety of agriculture tributary to the great system of railroads extending westward from Milwaukee to the Missouri river and beyond, and these railroads will, as surely as the existence of the law of gravitation, carry the principal products of that region seeking the markets of the east, to one or the other of their common terminal points on Lake Michigan. With fair treatment, Milwaukee has the advantage in this competition.

The milling business of Minneapolis, which has been the main cause of the decrease in Milwaukee's wheat trade in recent years, begins to give signs of being overdone, and indications are that there will be no important increase of the milling capacity of Minneapolis in the future. The settlement and tillage of the country is impairing the water-power of Minneapolis, while the decline in yield and quality of wheat in Minnesota upon lands which have been devoted to its culture for a number of years, necessitates the drawing of the supply for the mills from constantly-increasing distances, and under circumstances which must tend to diminish the advantage formerly enjoyed by Minneapolis over other competing points.

The movement of flour at Milwaukee in 1883 was not quite equal to that of the previous year, the shipments aggregating 3,990,596 barrels—257,458 barrels less than in 1882. The output of the mills was not more than 40 per cent. of their total capacity. The decrease of manufacture was caused solely by the unsatisfactory condition of the breadstuffs market during the greater portion of the year. The summer and winter hog-packing at Milwaukee, during the twelve months of 1883-84, amounted to 366,656 head—38,469 head less than in the preceding period of twelve months. The shortage was mainly in the winter packing and was the direct result of the failure of the last corn crop. The live stock business comprised receipts for the calendar year of 471,338 hogs, 104,078 beef cattle and 93,070 sheep.

The coal trade of the city continues steadily increasing, and Milwaukee is becoming the main depot for the coal supply of the north-west. The receipts of Ohio and Pennsylvania coal by lake were 550,861 tons, and of Illinois coal by rail 61,723 tons in 1883, against 510,493 tons by lake and 83,349 tons by rail in 1882, an aggregate increase of 18,742 tons, notwithstanding the suspension of the manufacture of iron during a good part of the year.

The custom-house records show the total arrival of vessels at the port of Milwaukee in 1883 to have been 5,480, with an aggregate tonnage of 2,713,878 tons; the clearances comprised 5,504 vessels aggregating 2,717,586 tons. A liberal share of the present lake tonnage is owned or registered at the port of Milwaukee. The prevailing rates of freight last season were fairly profitable, notwithstanding adverse conditions of trade.

The lumber business was comparatively good, though receipts were not quite up to the mark of the previous year, which were the largest on record. A new feature in the lumber trade of Milwaukee has recently been introduced here by a company representing one of the largest lumbering interests in the north-west, consisting of kiln-drying lumber on a large scale for market.

The manufacturing industries of Milwaukee are in a prosperous condition, and are constantly increasing in number and variety. It is to be regretted that there is no way of showing the progress of the city from year to year in this direction. Visible indications, however, show a constant and rapid development. At the rate of progress made in the last four years, there can be no doubt but that the next census will show Milwaukee to be one of the leading manufacturing centers of the Union. The most important acquisition of the past year was the erection of the nail mill at Bay View (which is practically a part of the city), by the North Chicago Rolling Mill Company, starting with a capacity for making three hundred thousand kegs of nails annually.

Receipts of the Milwaukee post-office, the quantity of mailmatter handled, the total

amount of general merchandise received and shipped, and the earnings of the various railway lines running into Milwaukee, all show a substantial increase over the previous year. These facts tend to prove that while trade was not "booming," there was no general stagnation of business.

The number of business failures in Milwaukee were notably few and unimportant, and altogether the record of the year's business cannot be regarded as seriously unfavorable.

Several important links have been added to the railway system of Milwaukee, which now extends to every part of Wisconsin, the mineral regions of Northern Michigan, Iowa, Minnesota and Dakota to the west and north-west, and through Northern Illinois and Central Iowa to the Missouri river in the southwest, comprising not less than 10,000 miles of completed railroads having terminal facilities at this city.

The Members of the Chamber of Commerce who died within the twelve months embraced in the report were Asahel Finch, William Kennedy, W. J. Kershaw, Jos. T. Bradford, Samuel L. Dickens, D. H. Henshaw, Ernst Salomon, Lindsay Ward and Wm. Gerlach.

The income of the Chamber from all sources was \$15,733 56, and the total disbursements \$14,748 59, surplus \$984 97, which, with the surplus of the previous year of \$335 78, shows a balance in the treasury at the end of the year of \$1,370 75.

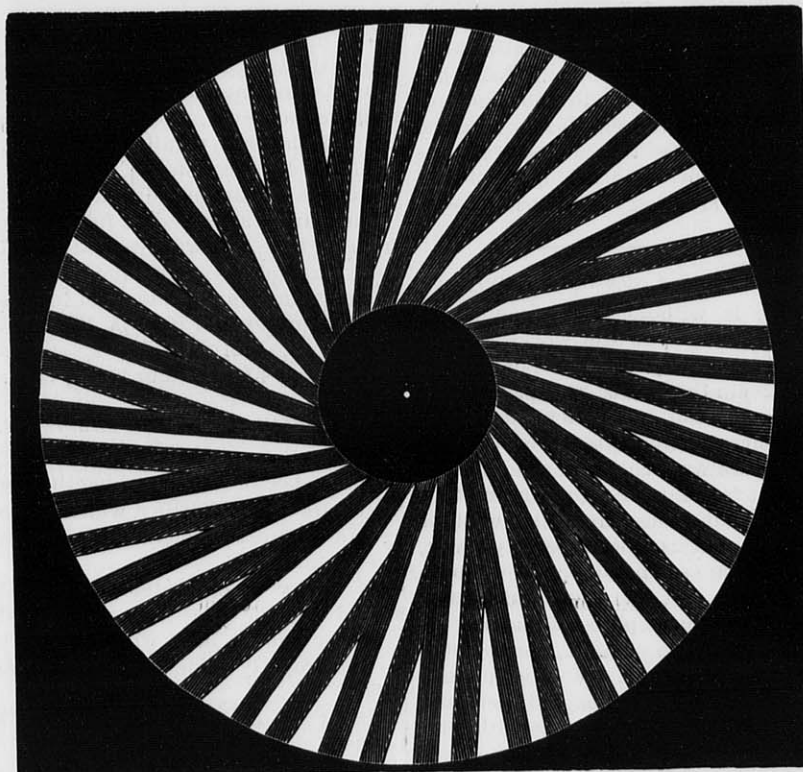
GRAIN CLEANING MACHINERY AND MILLING WITH BUHRS.

BY W. AND N. THAYER, OF WESTERVILLE, O.

CLEANING MACHINERY.—While it is not our object to publicly recommend any particular kind of machine, as there are many valuable ones now being made, we desire to say

A mill furnished with the above improvements, and completed with first-class bolting facilities, to clean up the stuff, will produce good, clean white flour, which will sell for a good, clean profit.

THE BUHR.—Having secured the best improvements for getting the wheat in good condition for grinding, the buhr will naturally demand our attention as being the next machine in the mill requiring improvement. It is very necessary that it be put in the best possible condition, and that condition uniformly maintained. In order to secure this object it should be the first consideration to know that the spindle, step, driver—in fact everything pertaining to the running of the buhr, should be the best, and so connected and adjusted with the buhr as to insure an even running and standing balance, giving to it a smooth and invariable motion of not more than 1,700 feet per minute for skirt of buhr. Having made satisfactory everything so far, the buhr is now ready for being put in perfect face, which may be done by getting a bosom to the thickness of three sheets of writing paper, extending out gradually to within 6 inches of the skirt of the buhr. This should be done with a sharp pick and red staff prepared for the purpose. The thickness of one piece of paper will be sufficient bosom for each buhr, after the buhr has been made ready for use. Having done the necessary work with the pick, another thing required to get the buhr in perfect face is, to grind it down with water. This may be done by suspending a pail of water over the eye of the buhr, allowing a small stream to flow constantly into the eye of the buhr, being careful that water has a free discharge at the skirt. The time required to grind a buhr down to a good face will vary, depending on the condition and kind of a buhr being treated. From half an hour to an hour and a half will probably be required.



THAYER'S MILLSTONE DRESS.

most emphatically, that no mill, we care not on what system it may be built and operated, can make good flour out of dirty wheat.

The smallest and most unpretentious mill should not be satisfied with anything less than a good rolling screen, which can be set up in any mill at a trifling expense, with fan attachment for dusting screenings. The rolling screen not only scours the wheat by attrition, but it removes from the wheat all sizes of gravel, sand and all small seeds, being a very good cockle machine. Next in importance is required a good smutter; following the smutter, a first-class brush-scourer.

Sometimes the brush-scourer is dispensed with by running the wheat twice through a smutter, while others, to save expense, use what is called a combined brush and smutter, but they can never be made to take the place of and do the work of two machines.

The cleaning of wheat is an important part in the manufacture of flour, being of the greatest importance in milling. Many millers do not consider this matter in its proper light. Simply freeing the wheat from foreign substances is not all that is required, but the woody fibre, the furze and crease dirt must be removed. In four-fifths of the buhr mills there is insufficient cleaning machinery, and right at this point is where improvements should commence.

In making these remarks we are actuated by no selfish motive, as we are in no wise connected with the manufacture of any wheat-cleaning machinery. We do most earnestly advise the thorough cleaning of wheat. Then let the miller follow up this improvement in wheat-cleaning machinery with middlings cleaning machines, next have the buhr in prime order for making middlings and broad bran.

The next move will be to try the face of the buhr, which may be done by the use of the staff and three pieces of paper, and if any high places can be found, wet them by using a sponge, rubbing them down with a buhr block, suitably prepared for the purpose. The face being perfectly true, it is now ready for the furrows. In our experience we have found that success on buhrs does not depend so much on the kind of dress used. Any good, ordinary dress that is well put in, giving proper proportion of furrow surface, together with the right draft to suit the nature and motion of buhr, with the proper amount of wheat run through it, and all taken care of in a common sense way, will produce good results.

The furrow should be $\frac{1}{2}$ inch deep at eye, and $\frac{1}{4}$ inch deep at skirt, and measuring from back of furrow, the draft should be $\frac{1}{2}$ inches. This applies to a close texture buhr. The closer the texture of the buhr, provided it will carry a fine sharp hone-edge, the better qualified are they to do good work. The man who has a rough open buhr, had best put them to work on and corn feed, for they can never be made a success on wheat. Furrows should be made, if possible, as smooth as the face, and should be sharpened the same as the face. This can be done with much better results and at much less expense with the buhr-block and water, never breaking the face of the buhr.

By the adoption of this plan it will be possible to run the Buhr from three to five years without the use of pick or diamond. To those who propose changing dress we recommend twenty-four quarters, two furrows to the quarter, with a little more width of furrow than face, as shown in the cut accompanying. To those contemplating buying new buhrs we would most earnestly recommend a thirty-inch buhr, under runner rigid on the

spindle; these buhrs are placed in an iron frame, and can be bolted down on the floor in any position desired, without the cost of an expensive hurst.

We have long since conceived the idea of making the under stone the runner, rigid and stiff on the spindle. Being fully assured that much better results can be obtained, from the fact of more even granulation. We have a centrifugal force that acts on every particle of grain, following it out from between the two faces of the buhrs the moment it is ground, giving greater strength and color to the flour. The grain, as it enters the eye of the buhr, falls on a live surface and radiates over the face of the buhr, making a more uniform feed, besides obviating all trouble from choke in the eye of the buhr.

THE LAST OF THE MOHICANS.

Mr. Joseph Lacroix has sold the patents of his father Nicholas Lacroix and E. U. Lacroix to the Geo. T. Smith Middlings Purifier Co. The main consideration was not large, but there are other features in the transaction which places Mr. Lacroix in a very comfortable position as far as competency is concerned. He is retained by the Smith Company for a period of ten years as an expert in any matter of patent litigation which may come up; furthermore, is to act as a milling engineer and adviser in certain matters pertaining to the business of the Smith Company. It is a part of the agreement that Mr. Lacroix is not to take out any patents on improvement in purifiers or centrifugal reels on his own account. This transaction amounts, as Mr. Lacroix expresses it, to "turning himself over to the Smith Company."

Mr. Lacroix started for Europe on the 12th ult. It is his intention to look up some milling matters while there, particularly to see the results of French milling experiments. In the latter connection, it will be remembered that the government, under the direction of the millers, has built three experimental mills, one a full roller mill, another a combination of stones and rolls, and the third a buhr mill, all as complete as may be, this being done to save each milling firm trying the experiment for itself, as was the case in this country. Mr. Lacroix will also represent the Smith Company while abroad, looking after the matter of some of their recent patents and the introduction of their machinery. This part of the business will also call him into Russia. With this acquisition of talent and tangibility in the form of patented features, the Smith Company have about "cleared the decks."—*The Millstone* (Indianapolis).

PIE-CRUST OR STARVE.

We are told that when Marie Antoinette was informed of a famine in the neighborhood of the Tyrol, and of the starving of some of the peasants there, she replied, "I would rather eat pie-crust (some of the story-tellers say 'pastry') than starve." Thereupon the courtiers giggled at the ignorance of the pampered princess who supposed that starving peasants had such an alternative food as pastry. The ignorance, however, was all on the side of the courtiers and those who repeat the story in its ordinary form. The princess was the only person in the court who really understood the habits of the peasants of the particular district in question. They cook their meat, chiefly young veal, by rolling it in a kind of dough made of sawdust, mixed with as little coarse flour as will hold it together; then place this in an oven or in wood-embers until the dough is hardened to a tough crust, and the meat is raised throughout to the cooking point. Marie Antoinette said that she would rather eat *croustins* than starve, knowing that these *croustins*, or meat pie-crusts, were given to the pigs; that the pigs digested them, and were nourished by them in spite of the wood sawdust.—*Popular Science*.

THINGS WORTH KNOWING.

GLYCERINE AND GLUE.—A German chemist named Pusche, a native of Nuremberg, reported to the trades union of that place that he met with great success in using glycerine together with glue. While generally, after the drying of the glue, the thing to which it is applied is liable to break, tear or spring off, if a quantity of glycerine equal to a quarter of the glue be mixed together, that defect will entirely disappear. Pusche also made use of this glue for lining leather, for making globe frames, and for smoothing parchment and chalk paper. He also used it for polishing; mixed wax with the glycerine is not used. The glycerine has also some properties in common with india-rubber, for it will rub out pencilings from paper so as to leave no mark whatever. A paste made of starch, glycerine and gypsum will maintain its plasticity and adhesiveness longer than any other cement, and therefore recommends itself for chemical instruments and apparatus used by pharmacists.

UNITED STATES MILLER.

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MILWAUKEE, JULY, 1884.

ANNOUNCEMENT:

WM. DUNHAM, Editor of "The Miller," 69 Mark Lane, and HENRY F. GILLIG & Co., 449 Strand, London, England, are authorized to receive subscriptions for the UNITED STATES MILLER.

We send out monthly a large number of sample copies of the UNITED STATES MILLER to millers who are not subscribers. We wish them to consider the receipt of a sample copy as a cordial invitation to them to become regular subscribers. Send us One Dollar in money or stamps, and we will send THE UNITED STATES MILLER to you for one year.

The United States Consuls in various parts of the world who receive this paper, will please oblige the publishers and manufacturers advertising therein, by placing it in their offices, where it can be seen by those parties seeking such information as it may contain. We shall be highly gratified to receive communications for publication from Consuls or Consular Agents everywhere, and we believe that such letters will be read with interest, and will be highly appreciated.

Cawker's American Flour Mill and Mill Furnishers' Directory for 1884, published by E. Harrison Cawker, of Milwaukee, Wis., and sold for (\$10.00) ten dollars per copy, is now ready for delivery. It shows the result of an immense amount of labor, careful inquiry and studious attention to details. It is without doubt the most accurate trade directory ever published, and will be of untold value to those desiring to reach the milling industry of America.

We glean from this neat volume of 200 pages containing no advertisements, that there are in the United States of America and our neighboring Dominion of Canada 25,050 flouring mills, taking them as they go great and small. The work indicates in about 10,000 instances the kind or kinds of power used by the mills, and the capacity in barrels of flour per day. It further indicates cornmeal, buckwheat, rye-flour and rice mills. It shows that the number of mills in the various states and territories of the United States are as follows: Alabama 453; Arizona 17; Arkansas 343; California 222; Colorado 54; Connecticut 288; Dakota 81; Delaware 98; District of Columbia 5; Florida 66; Georgia 631; Idaho 21; Illinois 1123; Indiana 1089; Indian Territory 14; Iowa 790; Kansas 489; Kentucky 713; Louisiana 61; Maine 280; Maryland 353; Massachusetts 340; Michigan 846; Minnesota 487; Mississippi 386; Missouri 1025; Montana 21; Nebraska 250; Nevada 13; New Hampshire 182; New Jersey 442; New Mexico 32; New York 1902; North Carolina 848; Ohio 1443; Oregon 145; Pennsylvania 3142; Rhode Island 51; South Carolina 274; Tennessee 801; Texas 703; Utah 110; Vermont 247; Virginia 781; Washington Territory 61; West Virginia 447; Wisconsin 777; Wyoming 2.

In the Dominion of Canada we find the record as follows: British Columbia 17; Manitoba 54; New Brunswick 198; Nova Scotia 102; Ontario 1160; Prince Edward's Island 39; Quebec 531. Total 25,050.

Taking the work throughout, and it is highly interesting to all concerned in the trade, and we take pleasure in recommending it.

Mr. BIERCE, of the well-known Stilwell & Bierce Manufacturing Co., of Dayton, O., made us a pleasant call June 13.

ALDERMAN HADLEY, the first president of the National Association of British and Irish Millers, London, England, has failed.

THE Chicago Open Board of Trade has moved into its new \$150,000 building and are running business at the new stand.

We think that the wheat requirements of the United States for seed and consumption may now be safely estimated at 312,000,000 bushels per annum.

THE Milwaukee, Lake Shore & Western R. R. will be extended through to Ashland, on Lake Superior, as soon as possible. The affairs of the road are in a very prosperous condition.

MR. DAVID WILLIAMS, late head miller for Norris & Dow at Stoughton, Wis., called on us recently. Mr. Williams reports that the firm he has been with have enjoyed a fairly prosperous year.

AUSTRIAN millers are making loud complaints because the government compels them to shut down their mills on Sunday. Millers in this country are generally glad to take a rest when Sunday comes around.

JUDGE HARLAN of the U. S. Supreme Court has confirmed the sentence of the lower court, convicting Fleming and Loring, of Chicago, who ran the great "Fund W" grain swindling scheme.

THE American Society of Civil Engineers held an interesting session in Buffalo, N. Y., commencing June 10. A number of valuable papers were read and a resolution passed asking President Arthur to appoint Mr. Whit-

temore, of Milwaukee, delegate to the International Standard-Time Conference.

SAM. W. TALLMADGE, of Milwaukee, makes his June estimate of the wheat crop at 516,000,000 bushels, or 375,000,000 bushels of winter wheat and 141,000,000 bushels of spring wheat.

DURING the eleven months ending May 31, 1884, breadstuffs to the value of \$144,952,162 were exported from the United States, against \$191,425,555 during the corresponding months in 1883.

It is a little surprising to us, that more millers do not introduce the electric light in their mills. Those who have done so are wonderfully pleased with it. It is undoubtedly the safest light that can be used in a mill.

MILL furnishers, manufacturers, flour brokers, exporters and importers of flour and grain should have a copy of "Cawker's American Flour Mill and Mill Furnishers' Directory for 1884" in their office. It is universally admitted to be the only reliable work of the kind.

WE respectfully call the attention of our readers to the special offer of premiums to subscribers, published on page 40 of this number. A great many millers and others in all sections of the United States and Canada have already availed themselves of these offers and they please in all cases. Do not fail to order soon. All money should be sent by post office money order, express money order or registered letter. If money is sent otherwise it will be at the risk of the sender.

DR. DONALD MACLEOD, a Scotch clergyman, recently delivered a lecture upon a singularly unpromising subject. The title was announced to be "The Sin of Cheapness," and the lecturer proceeded to argue that the "craving for cheapness and the hunting after bargains is not only economically false, but a cause of great suffering to thousands of men, women and children." Dr. Macleod endeavored to prove that cheapness was chiefly procured by the cruel oppression of seamstresses and other badly paid work-people.

MILWAUKEE AS A SUMMER RESORT.

Milwaukee is, without doubt, one of the finest summer resorts in the world. It has the reputation of being the handsomest and healthiest city in the United States. Situated right on the shore of Lake Michigan, one of the great American inland seas, the temperature is almost always cool and comfortable. There are but few days in summer, and that is when the wind comes from the west or southwest, when it is uncomfortably warm, and such spells are seldom of but few hours duration. In the past few years it has got to be considered the most pleasant manner of spending summer to obtain comfortable quarters at our excellent hotels or private boarding-houses for the season and then take trips to the numerous lake resorts within an hour's or half day's ride by rail on the lines of the Milwaukee & St. Paul, the Chicago & Northwestern, Lake Shore & Western, Wisconsin Central, or Milwaukee & Northern railroads. Pleasant excursions can be taken also on the numerous lines of lake steamers running from Milwaukee to various points in Wisconsin, Michigan and Illinois. Elegant drives about the city, delightful places of amusement, combined with every convenience for business, makes this fair city of Milwaukee, with its orderly population of 150,000 souls, a most desirable place of abode in the summer months.

BARLEY.

There is more barley consumed in the United States every year than is raised. The imports and exports for the past ten fiscal years bring out this fact very prominently:

	Imports.	Exports.
1873-74 bushels..	4,891,200	320,500
1874-75 "	6,255,100	91,000
1875-76 "	10,286,000	317,800
1876-77 "	6,703,000	1,186,100
1877-78 "	6,764,200	3,921,500
1878-79 "	5,721,000	715,500
1879-80 "	7,135,300	1,128,900
1880-81 "	9,528,600	835,200
1881-82 "	12,182,700	205,900
1882-83 "	10,050,700	433,000
Total.....	79,317,800	9,155,400

Thus within the past ten years we have used 170,000,000 bushels barley in excess of what we have produced. The barley is mainly imported from Canada. The cost of the 79,317,800 bushels barley imported into the United States in the past ten years is \$64,429,700, or a little over 80 cents per bushel of 48 pounds.

W. J. S., an experienced roller miller, writes to the UNITED STATES MILLER as follows: In glancing over the various milling journals I often notice advertisements com-

mencing something like this: "SITUATION WANTED IN A MILL USING ROLLS." These advertisers all desire to learn the proper manipulation of roller mills and the secrets of the separations required with a complete roller plant, and yet there are very few that are ready and willing to take the only means of learning them. Few indeed are the millers of many years experience in the old system of stone milling who are willing to take a subordinate position in roller mills for the purpose of learning, but there is no other possible way to learn, and it must be learned well indeed in order to run the mill with profit to the owner. A year's work in a subordinate position is necessary to start with, and this will only qualify an intelligent miller to act as assistant to the head miller for at least another year. The bottom round of the ladder is the place to start from, and no miller, no matter of how great experience in stone milling, can honestly and properly do his duty by his employer without at least two years' practical experience in roller mills before occupying the coveted position of "head miller in modern roller mills."

THE AGRICULTURAL RETURNS FOR JUNE.

The returns to the Agricultural Department for June place the increase of spring wheat acreage at nearly 900,000, or 9 per cent. The Pacific Coast is not included. The largest increase is that of Dakota, amounting to about 400,000 acres. The condition of this crop averages 101, and is up to standard in nearly every district. The condition of winter wheat averages 93, against 94 a month ago. It was 75 in June last year, and 99 at the same date in 1882. Since the previous report Illinois has declined eleven points; Ohio, three; Kentucky three; Indiana, Michigan, and some other states show a higher average. Those of the principal states are: New York, 98; Pennsylvania, 100; Maryland, 99; Georgia, 93; Texas, 98; Kentucky, 96; Ohio, 82; Michigan, 91; Illinois, 76; Missouri, 90.

The increase in the acreage of oats is 4 per cent.; the average condition, 90; it was 96 last year at same date, and 101 in June, 1882. The averages, as usual, are highest in the States north of the tenth parallel, and up to standard in all the Western States. The general average of rye had advanced from 96 to 97.

The barley average has fallen since May from 101 to 98. It was respectively 97 and 91 last year, and in 1882, in June. It is 97 in New York, 90 in Pennsylvania, 101 in Wisconsin, 100 in Minnesota, 97 in Iowa, 100 in Nebraska, and 90 in California. These states produce usually four-fifths of our barley crop.

USEFUL NOTES FOR ENGINEERS.

Among the questions most frequently asked of our inspectors when making their ordinary visits are the following, which are of such general interest to engineers as to warrant publication:

1st. How much water per pound of coal should be made into steam at 60 pounds pressure per square inch with 60-inch tubular boilers properly made, well set and carefully fired?

Under the above conditions, from 8 to 10 pounds, dependent somewhat, of course, upon the quality of the coal and the temperature of the feed water.

2d. How much more coal per pound of water does it take to carry 80 pounds per square inch than it does to carry 60 pounds per square inch?

This question could with more propriety be put as follows: How much more heat does it take to make a pound of steam at 80 pounds pressure per square inch than it does to make a pound at 60 pounds per square inch?

Practically, no more coal will be required; theoretically, about 4-10 of one per cent., or about 1-250 part more.

3d. Do you get enough better results from steam of 80 pounds per square inch than you do from steam 60 pounds per square inch to pay for the extra wear and tear of boiler and engine?

Depends entirely upon conditions: If you can make use of steam of 80 pounds pressure it pays to use it; there are conditions, however, where 60 pounds, or even less, would be decidedly more economical.

4th. How much more heat do you get from pipes carrying 60 pounds pressure than from pipes carrying 10 pounds pressure?

Two and one-tenth per cent. more heat will be given out per pound condensed from steam of 60 pounds pressure than from steam of 10 pounds pressure, in falling from the temperature due to the respective pressure to 212° Fahr.

5th. What proportion of direct heating surface to the volume of a fairly protected room is required to maintain the temperature of the room at 60° Fahr. in buildings heated by steam?

From 1-75 to 1-250, according to size and exposure of room.

6th. How much is a given amount of steam reduced in bulk by compressing it

from 60 pounds per square inch to 80 pounds per square inch?

About 20 per cent. See any steam table. —The Locomotive.

OPTIONS AND PRIVILEGES.

Not long since a petition was circulated on the St. Louis Exchange asking that "option trading be suppressed." We assume that this refers to trading in "futures"—that is buying and selling grain and provisions for future delivery. This is a very different matter from dealing in "privileges," which we can scarcely think is recognized as legitimate on the St. Louis Board of Trade, and is in actual violation of the laws of Illinois. The purchase or sale of a "privilege" is a transaction which contemplates the right to offer or demand a certain amount of property at a certain price within a given time. As a rule, no actual transfer of property ever takes place and no trade is made. The transaction is really a bet in which one party gives and the other takes the odds. But the term "option" covers a very different class of trades when it is applied to actual purchases and sales for future delivery. This kind of trading is undoubtedly abused in all the commercial and stock exchanges, but it could not be suppressed without great injury to the business of the country. The buyer of grain in a certain section must gather it in by the wagon-load, while he sells it by the car-load and by consignments amounting to many thousands of bushels. The grain-buyer in the country to-day may feel assured that he will have a certain quantity to deliver in Chicago some time next month, but he cannot specify the exact day. He cannot be sure of the date at which he shall have the required quantity collected nor the very day when he can secure transportation from the railroad company. But he can safely contract to deliver the grain in June, which gives him a certain leeway. It is surely a legitimate transaction for him to sell the grain for June or future delivery. Again, the fixing the price for future delivery enables the country grain-buyer to conduct his business on a comparatively safe basis. He ascertains the cost of transportation, estimates all his personal expenses, makes an allowance for his profit, and thus arrives at the price he can afford to pay the farmer for his produce. But if the country grain buyer could not sell the property in advance of its collection, his business would be largely speculative, and he would be less liberal with the farmer, for he would reserve a large amount of profit in order to cover a contingent decline in the Chicago market. If he has already sold a large consignment of wheat in Chicago at \$1 a bushel, he can afford to pay the farmer a better price than if he is in doubt when he can sell it, or whether he will get 90 cents or \$1 for it. In this way sales for future delivery have become essential to the stability of the business of handling crops, and they cannot be abolished without detriment to the grain and produce interests, and especially to the farmers. It is true that a large proportion of the future trades on margins are made for speculation, with the purpose of merely settling the differences at market rates without handling the commodity. It would be beneficial to the country if that kind of gambling could be stopped, but the suppression of all purchases and sales for future delivery, in order to check speculative practices, might be productive of much more harm than good. And it would obviously be unfair to suppress legitimate, bona fide, and useful transactions as a means to prevent gambling transactions. The confusion of the option to deliver at a certain time in the future, and the privilege to make a trade in the future, has led to a popular misapprehension of the board of trade transactions, which ought to be corrected as far as possible. Actual sales and purchases, for future delivery, are important aids to the movement of crops, which could not be abandoned without serious injury to the agricultural classes, the receiving and shipping merchants, the elevators, and even the milling and trade interests, notwithstanding the abuses to which the system has led.—Chicago Tribune.

AN ORIGINAL RAT-TRAP.

An Illinois correspondent has been successful in catching rats with a trap of his own contrivance. This trap consists of a sheet-iron pipe with a sort of rim on both ends and a strong two-bushel sack tied firmly around one end. Every hole is stopped in the corn-crib but one, which opens into a feed-box on the other side of the partition. Then the pipe is placed in the feed-box and fitted, the open end firmly over the hole, allowing the sack to hang over the edge of the box into the manger. The trap prepared, the door of the crib is left open and the rats permitted to have their own way for an hour or so. Then the door is shut and a noise made to frighten the rats. Having but one means of escape they rush into the pipe and down into the sack. This correspondent caught twenty-seven rats the first time he tried his trap.

[Written for the UNITED STATES MILLER.]
WAGES AS AFFECTED BY THE TARIFF.

BY JOHN W. HINTON, OF MILWAUKEE.

American free trade advocates always try to convey the idea that iron and steel manufacturers in this country make immense fortunes at the expense of the people—and dodge the question as to whether the iron and steel manufacturers of England do not receive profits and amass fortunes so gigantic that American profits are mere pigmies.

In a recent work—"Creators of the Age of Steel," by W. T. Jeans, article "Sir Henry Bessemer," after whom our modern steel and steel rails are named, occurs the following, on page 128:

"While he was without honor at home, he was not without emolument. When his patent expired in 1870, he found that he had received in royalties over a million sterling, or to use his own expression, £1,057,748 'of the beautiful little gold medals which are issued by the royal mint, with the benign features of her most gracious majesty, Queen Victoria stamped upon them.' His Sheffield works were a source of unexampled profit. When the partnership expired it was found that the firm had divided in profits, during their fourteen years' working, fifty-seven times the amount of the subscribed capital, and after that the works, which had been considerably extended at the expense of the revenue, were sold for twenty-four times the amount of the whole subscribed capital. They thus received, altogether eighty-one times their original capital in fourteen years. In other words, their profits for every two months amounted to as much as the capital originally invested in the business."

Now the wages paid in England is often less than one-fourth of what is paid in this country. In illustration, Mr. Williams of Youngstown, Ohio, a puddler, appeared before the committee of ways and means at Washington, and testified that he received when a puddler in England \$1.25 a ton for puddling; in Youngstown, Ohio, he received \$5.50 for puddling a ton, or more than four times as much in this country as he did in England. Mr. Williams worked at the Downers works in England where "15,000 men worked," he testified, "of all that number he did not know more than two or three who owned their homes." In reply to a question, as to "how many women were employed?"

"Mr. Williams—They would number from two to three thousand. The women were employed at such work as unloading coal. They were employed on the top of the banks or 'tips' (as they were called), and at the blast furnace, and in fact wherever a woman could be put to do a man's work, because the women did it cheaper."

As to the effect of free trade on wages, Mr. Williams said:

"I want to impress upon your minds if possible, that if a reduction in the tariff takes place, it affects the wages of working men in America; for just as soon as we come into competition with foreign countries, where labor is cheap, it becomes utterly impossible for American manufacturers to pay the wages that they now pay, and the first thing that occurs is a reduction of wages. Now, we cannot submit to a reduction of wages and live. We had a reduction in the tariff last spring. * * * Instead of getting steadier and more of it, we have less work, since that reduction took place."

As to the way the laborers lived abroad and in this country, replying to Mr. Kasson:

"Mr. Williams—I am glad the gentleman has called my attention to that. In this country we live about in this manner, that is the general average of working men who earn enough to do so. There are some men in the country who earn \$1 or 1.50 a day, and of course cannot live in that way. A man who has to pay \$10 a month for rent, and who gets only \$1.50 a day, has not much left to support himself and wife and children upon. In the old country I would get a little bread and butter in the morning and a little tea, and at dinner a little meat, once in a while a piece of pie and sometimes cake. But these were luxuries that did not often come. The workman in this country, who earns decent wages, has for breakfast a piece of beefsteak, and at dinner some kind of meat again and it may be a pie or pudding. At suppertime he may not have any meat, but he can have pie or cake or something of that kind. I believe that the wealth producers of this country are entitled to that kind of treatment. The men who are the creators of wealth should enjoy the benefits of that wealth. In the old country, where I lived we lived in houses that were sometimes denominated rows—long rows of houses—300 or 400 yards long. I have known fifty houses in a row, and I have known these fifty houses to be without water-closet accommodations of any kind."

"This is the way we look at these matters. This may not seem a very interesting address to you. I am not speaking on theory. I am speaking of the matter as it appears to us, and as it can be proved and demonstrated."

Mr. Williams stated:

"I and these other gentlemen are here as representatives of the workmen of that valley who are not only members of the association, but also blast-furnace men, molders, carpenters, farmers and business men generally. Every body in that section of country (although it may appear foolish in your idea) is interested in this question."

He also said:

"It depends altogether in Youngstown upon the iron manufacturers. If our works are in a prosperous condition, every other business is booming, and if we are not working, every other business is in a bad condition."

The above are the statements of a practical man, familiar, by practice, with labor and its conditions, in both England and the United States. He knows the benefits of protection to laboringmen in this country, and he knows it from practical and experienced contrast, having worked in both countries.

Forewarned is forearmed. The chief democratic paper of this state, the organ of the

chairman of the state democratic central committee, let the cat out of the bag when it said, June 3, 1883:

"The workmen have the long end of the lever, for a time at least, and the time will be limited to the date of the next Presidential election." (*La Crosse Chronicle*.)

Mr. Williams knows what that threat means, he knows and testifies, that if the tariff is lowered "it becomes utterly impossible for American manufacturers to pay the wages they now pay."

And Mr. Williams, representing before the "committee of ways and means," all kinds of labor, knows, as all intelligent workingmen know from experience, practical knowledge, that:

"A protective tariff stands at the elbow of every laboring man in this country, to help him to better ways, to a more independent condition, and to a higher development of his faculties. It is the refuge for his weakness and the bulwark for his strength." (*Chicago Inter Ocean*, Dec. 15 1880.)

Workingmen believe with Adam Smith, that:

"The production of articles at home which can be made or grown somewhat cheaper abroad, though it should not produce cheapness, does promote the employment of the people; does give them the means of purchase; does produce plenty—permanent plenty—plenty widely diffused—plenty extending everywhere to the masses of the population; and that the opposite policy, even under the most favorable circumstances, though it should and will create cheapness, will destroy the means of purchase, and introduce a real and spreading want."

Mr. Williams' allusion to the favorable condition of workingmen in this country as to their own homes, living, etc., with those of England, is borne out by the remarks of Lord Chief Justice Coleridge of England, who at a farewell banquet in New York, Oct. 11, 1883, said:

"It is not your colossal fortunes that have interested me, I can see them at home. What I do admire, what I long to see and never shall see in my own dear England, is what may be called your upper and lower middle classes. I have seen among them men who would do credit to any capital in the world. I have seen tens of thousands of houses occupied by the owners of them. I am told that in general your farmers own their farms, your cultivated gentlemen own their houses, and your artisans own their cottages. What a state of satisfaction and content this produces in time of peace! What an irresistible force in time of war!"

Republican protectionists desire to maintain and to perpetuate this condition of affairs. Democratic freetraders desire to destroy them. The workingclasses at the polls will determine whether they want to be the competitors with "pauper Europe and Pagan China," or whether, under protective tariff, their wages shall be maintained at living rates.

James G. Blaine says truly:

"The industrial classes study the question (of protective tariff) closely, and in many of the manufacturing establishments of the country, the man who is working for day wages will be found as keenly alive to the effect of a change in the protective duty as the stockholder, whose dividends are to be affected."

THE NEW ORLEANS WORLD'S FAIR BUILDING.

BY MAJOR BURKE.

The main building of the World's Industrial and Cotton Centennial Exposition, at New Orleans, now being constructed, is in many respects, the most remarkable edifice ever erected in this country. The only larger structure in the world intended for display of natural and industrial products, mechanical appliances, &c., is the Crystal Palace at Sydenham, England. Many of the principal architects of the North and South engaged in the competition for the plan of this building, and a number of elaborate and excellent designs were presented for the examination of the exposition management. After a very careful consideration of all the details of each design, the plan prepared by Mr. G. M. Torgerson, of Meridian, Miss., was selected as affording the most complete and economic arrangement for exhibition purposes. Considerable surprise was occasioned by this choice. It was wholly unexpected that an architect in a little Mississippi town would gain a victory over men who had furnished designs for some of the chief buildings on the continent. Mr. Torgerson was highly recommended by Mr. G. W. Cable, and is a Swede, thoroughly educated and experienced in all the branches of his profession. A few years ago he located at Oxford, and has so revolutionized the architecture of the place that there are few handsomer cities anywhere. In his plan for this great exhibition building, Mr. Torgerson has sought to secure one vast unbroken level for the display in the most compact and ornate form. In this respect he has succeeded so admirably as to call forth commendatory expressions from the projectors of all former American expositions. He has produced the largest single room, every portion of which can be seen from any point without obstruction of which there is any knowledge.

The building is 1,378 feet long by 905 feet wide, covering thirty-three acres, or eleven acres more than the main building of the Philadelphia Centennial Exposition of 1876. There are 1,656,300 square feet of floor space, including the gallery. The reader may form a better impression of the vast dimensions of

the structure by imagining three ordinary city squares or blocks, one way and five the other, covered by a solid roof. And if he chooses to allow his fancy to carry him still further he can picture a monster panorama of the world's industry, extending before his vision uninterrupted by a single object. The roof which is being made in Cincinnati, will cover 1,000,000 square feet. The active commercial rivalry of the different sections is aptly shown by the distribution of contracts for the materials. The window sash comes from Milwaukee, Wis. The glazing will be done by St. Louis parties. Four thousand kegs of nails are being shipped from Wheeling, W. Va. Nine million feet of Mississippi lumber will be consumed. A massive and magnificent group in bronze, typical of America, to be placed over the main entrance, is being made at Canton, Ohio; also a statue of Washington and Columbus and coat-of-arms of all the States, which will appear in medalion form as part of the exterior ornamentation. Exquisitely modeled cornices are being made at New Orleans.

The building will be 60 feet high, with a tower 115 feet high, and the architect has been unusually fortunate in rendering the exterior exceedingly unique and attractive. A platform will be erected on the tower, reached by elevators, from which visitors may have an unexceptionably fine view of the city of New Orleans, the Exposition grounds, the Mississippi river, and the surrounding country. There will be one line of gallery extending around the entire circumference of the building, to which visitors will be carried by twenty steam and hydraulic elevators, representing all the manufacturers of these conveyances in this country. The music hall, situated in the center of the building, will be 364 feet wide and will comfortably seat 11,000 persons. The platform is being built for 600 musicians. To light the building with incandescent lamps will require 15,000 lights and 18,000 horse-power. To light with the arc system will require 700 lamps and 700 horse-power to operate the dynamo. The total steam required for lighting and for machinery hall will be at least 3,000 horse-power. In this estimate is included the power for five arc lights of 36,000 candle-power each, which will light the grounds. These are the largest single lamps ever constructed. The building will be in complete readiness for the reception of articles intended for exhibition by the middle of August.

METHODS OF SELLING MACHINERY.

Sometimes it seems to be assumed that the best way to sell machinery is by making comparisons unfavorable to other manufacturers in the same line. This plan hardly ever proves a permanent success. Buyers are naturally enough interested in knowing the good qualities of what they are solicited to buy, but knowing these may be trusted to make their own comparisons. Argument in the way of comparative merit, however honestly meant, is generally looked upon as quite the reverse. Again it seems frequently to be taken for granted that representations quite beyond reason must be made, apparently on the ground that the buyer will make reductions anyhow, and that unless he has high figures to start with he will get his estimate of efficiency and superiority too low. These high representations may occasionally be the means of effecting a sale, but not generally. Most of those who are likely to buy, a steam engine for instance, if not experts in steam engineering have learned enough of the subject to know that there are a good many who build steam engines that cannot be improved upon 100 per cent., and it is a healthy sign that the number of those who are not pleased with assertions to that effect is increasing. They understand in a general way why the speed of a steam engine cannot be perfectly controlled, and are not likely to heed statements to the contrary. They know that any machine will wear out, is liable to break down under sufficient provocation, will need repairs, and that skill and judgment are required to properly handle costly machinery, and assertions to the contrary do not count for anything. Perhaps it would be more nearly correct to say they do heed such statements, and take account of such assertions, by reasoning that misstatements in one respect are likely to be accompanied by misstatements in other respects, which would certainly be a logical if not always a correct conclusion.

There is probably in these extravagant representations not so much an intention to deceive, as there is a desire to keep up with others in this respect, but those who are the most successful in building up permanent business do not resort to them. There are many, and their number is increasing every day, who want to know exactly what they buy, and such get to deal with manufacturers who give them plain facts.

No conclusion that might be drawn from the foregoing will apply to those who sell stock in impossible inventions—steam engines

that run without steam and boilers that make steam without fuel. They deal with another class, and start to sell humbug pure and simple, but because they are successful with the class with whom they deal, honest men should not assume that people generally have come to demand being humbugged. Quite the contrary is true. There will always be enough to invest in a railroad to the moon, or in a trans-Atlantic balloon line, but those anxious to do so are not in the majority, and it is a mistake for honest dealers to assume that they are forced to adopt the methods by which such stock is placed.—*American Machinist*.

ITALIAN METHODS WITH LIME MORTAR.

A correspondent of the *Builder* gives a few details of the Italian method of making and using lime-mortar which are new to us, and of considerable interest, as are nearly all the particulars of construction as practiced by these skillful workmen. In the opinion of the *Builder's* correspondent, most of the modern Italian processes are identical with those practiced in the same country by the ancestors of the present inhabitants 2,000 years ago; and he believes that the good quality of the Roman mortar, which has been proverbial for centuries, belongs equally to that made every day in Naples or Perugia. As every one knows, the custom among the Italian masons is, on commencing work upon a new building, to dig first a pit, large enough to contain all the mortar required for the work, into which is put lime enough to fill it, within a foot or two of the top. Water is then poured in until the pit is filled, and the mixture is left to itself, care being taken only to add water as that first put in is evaporated or absorbed. As mortar is wanted, a portion of the lime is taken from the top of the mass, but the lower portion, which will be used to mix with the plastering mortar, remains undisturbed for years and acquires a smooth, pasty quality much prized by the Italian architects, who place a value upon the lime which they use for such purposes proportionate to the length of time which has elapsed since it was first slacked. The good effect of this mode of preparation is seen in the perfect stability of the mortar, which never swells or cracks, and when used in brick-work or stone masonry, is never observed to give rise to those disfiguring efflorescences which are almost inevitable with us. On plastering mortar thus made there is no difficulty in laying the fresco colors which are used in Italy with such splendid effect, but which burn out into pale and unsightly patches when laid upon our raw, half-slacked mortar.

With lime treated in this way work can be executed which would be impossible with such materials as we employ. As an instance of this the correspondent of the *Builder* quotes the *battuto* roofing which is constantly used to cover costly and important buildings in Southern Italy, and which consists simply in a thick coating of lime mortar spread over the timber work and beaten continually with heavy clubs for ten days or two weeks in order to consolidate it. The climate of southern Italy is rainy, if not cold; but these roofs, which if made of what we consider good lime-mortar, would transmit water like a sponge, serve there to protect for centuries the house beneath. The same kind of work is used for floors, taking the place which would be filled among us by cement-concrete, and the beaten lime floors, appear to be as hard and smooth as anything that we construct with much more costly materials. That this difference in quality between our own and the Italian mortars is due to the mode of treatment rather than the original character of the lime used, is indicated by the fact that many different varieties of limestone are employed there, according to circumstances of locality or convenience, without any material variation in the result—the Italian workmen having learned that art which we care so little for, the making the best of poor or indifferent materials.—*American Architect*.

The development of wheat culture in America has been decidedly progressive since 1868, as the following exhibit, which also embraces our annual exports during that period, shows:

	Wheat crop.	Exports.
1868.....	224,000,000	26,632,014
1869.....	260,000,000	19,717,201
1870.....	235,000,000	53,930,780
1871.....	230,000,000	52,580,111
1872.....	250,000,000	38,985,755
1873.....	281,000,000	52,014,715
1874.....	308,000,000	91,510,898
1875.....	291,000,000	72,912,817
1876.....	289,000,000	74,750,632
1877.....	365,000,000	57,043,936
1878.....	420,000,000	92,241,626
1879.....	449,000,000	150,502,506
1880.....	498,000,000	180,304,480
1881.....	380,000,000	186,321,514
1882.....	510,000,000	121,892,389
1883.....	420,000,000	147,811,316

The extraordinary exports of 1879, 1880, 1881 and 1882, were due to deficient harvests in France and England, and partially to unsatisfactory crop results in Russia.

1876--NINTH YEAR OF PUBLICATION--1884.

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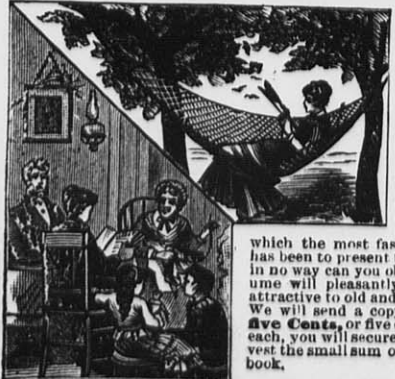
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THE CASTING OF THE LARGEST CANNON EVER
MADE IN THE UNITED STATES.

The improvements in the construction of heavy ordnance have been quite marked during the past few years, and profiting by the experience of the past, large guns, especially for coast defense, are now made of far more strength and durability, and of greater projecting power, than those in service during the late civil war. In the fulfillment of a contract, recently made between the United States Government and the South Boston Iron Company, there was cast yesterday afternoon at the foundry of the latter, the largest gun ever constructed in this country. The preliminary work necessary to the casting of a gun of any size is considerable, and requires to be done by skilled hands, for the slightest imperfection will seriously interfere with the usefulness of the gun itself when completed. In the upper portion of the ordnance foundry of the South Boston Iron Works is a large pit, which is always used when guns of any size are to be cast. This pit is about forty feet deep, and a dozen feet wide, built in a circular form, the outside being of large iron plates riveted together, and as there is only a depth of about twelve feet to tide-level, these plates have to be anchored down to keep them in position, and to withstand the pressure of the water. Next to the iron plates is a brick wall twelve inches thick, and inside of this a thick layer of cement and sand. This pit originally cost \$6,000, and to make it available for yesterday's work it had to be made deeper, and a number of other alterations made. Into this had been placed for the casting what is termed a flask or circular mold, which is made in sections, and consists of an exterior body of iron, with a layer of sand and cement on the inside, about six inches thick, which is covered with a composition of blacking. In the interior of the flask, which was about four feet in diameter, was placed the core, consisting of a long wrought-iron flue, around which is placed a layer of rope, and over this a thickness of sand and cement. Into the interior of this core, during the casting, cold water is run in by a pipe down one side, and forced out boiling hot on the other side. Near the pit are located three furnaces, each of which yesterday contained about thirty-six tons of iron, which, at 4 o'clock in the afternoon, after having been subjected to an intense heat for twelve hours, had been reduced to a molten mass. Connected with each of the furnaces were long troughs for the conveyance of the hot metal to a large iron tank a few feet from the pit, known as the pool or mixer, and from which two short troughs ran into the flask. On invitation of President Hunt of the company a select party of gentlemen were present to witness the event, among whom were Collector Hunt, ex-United States Senator Barnum, Senator Miller, F. B. Cotton and W. E. Coffin, President and Treasurer of the Pembroke Iron-works, Chief Engineer D. B. Macomb, Capt. E. P. Wyle and Capt. E. P. Lull, attached to the Charlestown Navy Yard.

At a few minutes past 4 o'clock it was announced that everything was in readiness. Superintendent Asbrand and Foreman Woods took their positions near the pit, and the begrimed workmen, with ladles in hand, arranged themselves on each side of the troughs and near the flask. Each one was silently and patiently waiting, when, at 4:24 o'clock, the foreman sang out, "Let her go," and immediately from each of the furnaces there came a stream of molten iron which threw out thousands of sparks in every direction, and to the beholder in the further end of the gloomy surroundings of the foundry appeared like a Fourth of July fireworks celebration on a distant prominence. The hot mass ran into the flask with a seething noise, and to the observer who dared to gaze into the depths of the flask it seemed as if one was, indeed, looking at a veritable lake of fire. During the filling of the flask the scene was quite novel, the dusky forms of the workmen, as they hurriedly moved to and fro, being in strange contrast to the bright golden color of the hot iron, while the silence of the assembled company, and the low, quick orders of the foreman, gave evidence of the importance of the work. At the end of twenty-four minutes the flask was filled to the brim, and those in charge announced that, as far as it had gone, the casting had been very satisfactory.

While the iron is cooling the stream of cold water will be kept running through the core, and a wooden fire will be kept burning outside and all around the flask. The core will be removed as soon as the iron is cooled sufficiently, and the latter will probably be in a condition to be worked upon by Tuesday next. This casting was made with the breech up, and, in order that the gun may be perfectly strong, the mold is constructed about five feet longer than what the gun is intended to be finally, and the part not wanted is cut off. When completed it will be about thirty

feet in length, of 12-inch rifle, weighing 212,000 pounds, and worth \$28,000, about half the sum that a steel gun would have cost. It is calculated to be able to throw a projectile six miles. The last large gun made by the South Boston Company was in 1877, when a gun was cast which weighed 90 tons. This company is also under contract to furnish to the United States a 10-inch wire-wrapped cast-iron rifled gun, a 12-inch rifled mortar, and another gun similar to the one cast yesterday, but shorter. Before being accepted by the Government, each gun has to be submitted to a critical test by the proper inspectors, and if not perfect, it is rejected.—*Boston Advertiser*.

WHY WHEAT IS LOW IN PRICE.

In a special report upon the production of grain in the United States, J. R. Dodge, statistician for the Department of Agriculture, says that the distribution of the wheat crop of 1882 was 48,000,000 bushels less than the production, which increases the supply the present year of consumption to 468,000,000 bushels. The requirement for consumption, on the basis of a population of 55,000,000, is 259,000,000 bushels; for seed about 53,000,000; or 312,000,000, exclusive of exportation. The exports from July 1, 1883, to Feb. 29, 1884, were 71,321,539. If continued at no greater rate of shipment, the exportation of the year will not exceed 97,000,000 bushels. This would make the distribution 409,000,000 bushels, while the estimated production was 420,000,000, exclusive of the surplus of the crop of 1882. This leaves an adequate supply for any probable emergency.

If we take the results of the March investigation, we find 119,000,000 bushels in the hands of farmers and 31,000,000 in elevators and warehouses, or 150,000,000 unmilled, in addition to the flour in mills and on the market. The spring wheat requirement for seed is not above 15,000,000, and a possible export of 35,000,000 will then leave 100,000,000 for bread, besides the present stock of flour in course of distribution. The wheat of the South will be ready for milling before half the available supply is consumed.

An erroneous impression has been derived from the fact that the European crops of last year, as estimated, were less by 78,000,000 bushels than the average production. But the product of 1882 was 126,000,000 above that average, giving an excess of 48,000,000 above the rate of consumption of the prior period of eight years.

The statement is as follows:

	Bushels.
Annual average, 1874-'81.....	1,143,826,044
Annual average, 1882.....	1,270,167,150
Annual average, 1883.....	1,066,088,688

To this excess of 48,000,000 add 48,000,000 bushels surplus in the United States in 1882, and increased production in India, and it will not be difficult to understand how the markets of the world have been glutted during the last year. To gather in the surplus of 1882 and carry it half around the world, and place it on the market, run it through the mills and various channels of trade that lead to consumption, requires time, and gives to 1883 a plethora of wheat in a year of low production.

Some idea of the trustworthiness of these estimates may be gained from the fact that in a period of six years ended with 1882, the estimates of the Department of Agriculture regarding the production and the total distribution of wheat, for food, for seed, and for exportation, varied from the ascertained facts only 27,657,200 bushels. No more satisfactory result of the test of six years' calculations, on the same basis could be desired. The only change in rate of consumption is the reduction of one-fourth of a bushel per capita for 1881, the year of scarcity and high prices.—*Chicago Tribune*, May 31.

CHILLED IRON ROLLERS.

Chilled iron is a form of cast iron with a surface as hard as flint. When molten iron is poured into moulds which are made of good heat-conducting material, such as iron, steel, &c., then the surface of the cast which comes into direct contact with the mould, forms an exceedingly hard layer. This is due to the fact that on account of the rapid cooling, the carbon does not separate as graphite, but remains chemically incorporated with the surface of the cast. Such products we know as chilled iron.

The rollers for mills are cast in drilled cast iron cylinders, and are therefore chilled on their entire surface, which hardness decreases towards their centre, and as a consequence they can be hollowed with ease. Theoretically the manufacture of chilled iron appears exceedingly simple, practically it presents many difficulties, depending largely upon the chemical composition and proportion of iron, of the temperature and thickness of the walls of the mould and many other conditions.

The exceedingly small amount of wear of the surfaces of the best chilled rollers, recommends their use very strongly for milling purposes as compared with stones. In smooth rollers this wear is almost nothing, and even in

grooved rolls it requires many months, even years, before any sharpening is necessary.—*Muehlen & Maschinen Industrie Zeitung*.

MEASURING STANDING GRAIN.

An officer in the English navy has constructed a table for estimating, with all needful accuracy, the amount of wheat on an acre of land before it is harvested. The estimate can be made as soon as the grain is ripe. Make a wood or iron frame one yard square, carefully let it down over the standing grain, and then shell and weigh all the grain on the straws belonging inside the frame. If a circular "crop form," as he calls it, is more convenient, make it 6 feet 9½ inches in diameter, of half-inch iron. From his elaborate table, we extract the following:

2 oz. per sq. yard equals	10.08 bu. per acre.
2½ oz. per sq. yard equals	12.60 bu. per acre.
3 oz. per sq. yard equals	13.86 bu. per acre.
3½ oz. per sq. yard equals	15.12 bu. per acre.
4 oz. per sq. yard equals	17.65 bu. per acre.
4½ oz. per sq. yard equals	20.17 bu. per acre.
5 oz. per sq. yard equals	25.21 bu. per acre.
5½ oz. per sq. yard equals	29.00 bu. per acre.
6 oz. per sq. yard equals	30.25 bu. per acre.
7 oz. per sq. yard equals	35.29 bu. per acre.
8 oz. per sq. yard equals	40.33 bu. per acre.

These estimates are on the basis of 60 lbs. per bushel. The 2½ ounces to the square yard is about the average yield of wheat per acre in America; the 5½ ounces per square yard is the average in Great Britain.

ANALYSIS OF THE AMERICAN GLUCOSE.—The commercial samples of liquid starch sugar, or "glucose," examined by a committee appointed in the United States to investigate the subject, were found to contain from 34.3 per cent. to 48.8 per cent. of dextrose, 0 to 19.3 per cent. of maltose, 29.8 to 45.3 per cent. of dextrin, and 14.2 to 22.6 per cent. of water. The samples in solid form—"grape sugar"—ranged in composition from 72 to 73.8 per cent. of dextrose, 0 to 36 per cent. of maltose, 4.2 to 9.1 per cent. of dextrin, and 14 to 17.6 per cent. of water. Three specially prepared samples of "grape sugar" contained respectively 87.1, 93.2 and 99.4 per cent. of dextrose, the last being "crystalline anhydrous dextrose." The ash in the "glucose" varied between 0.335 and 1 per cent., and in the "grape sugars" between 0.335 to 0.75 per cent.

NONSENSE.

"Yes, indeed," said the high-school girl to her brother Jim. "In this affair I obtained the gibbosity on Amy." "You did what?" inquired the boy. "Obtained the gibbosity—the protuberency, you know." "Is it anything good to eat?" was the next question. "O dear, no, you stupid boy; merely a figure of speech—what you call the 'got the bulge,' only that is horrid slang."

A LITTLE French boy awakened his mother early, the other morning, to ask her what God is, and whether he had eyes, a nose, and a mouth. "My child," replied the mother, half asleep, "God is everything—the heavens—the infinite—everything that you can't understand." "Then," said the child, "God must be an American, for there are some little American boys at school and I can't understand them at all!"

JIM WEBSTER, a hard-looking colored man, was brought to a justice in Austin for stealing some money from the house of Col. Jones, one of the most respectable citizens. Said the judge, very impressively to Jim: "Don't you know that no good can come of stolen money—that there is a curse on it?" "Boss, I didn't know Col. Jones stole dat money. I allus 'spected him ob bein' an hones' man. White folks am gettin' to be mighty onreliable nowadays."—*Texas Siftings*.

AN old bachelor recently gave the following toast: "Women—the morning star of our infancy, the day star of our manhood, the evening star of age. Bless our stars, and may they always be kept at a telescopic distance."

THEY were very fond of each other and had been engaged; but they quarreled and were too proud to make it up. He called a few days ago at her father's house—to see the old gentleman on business, of course. She was at the door. Said he, "Ah! Miss—I believe. Is your father in?"

"No, sir," she replied. "Pa is not in at present. Did you wish to see him personally?"

"Yes," was the bluff response, feeling that she was yielding, "and very particular personal business." And he turned proudly to go away.

"I beg your pardon," she called after him, as he struck the lower step; "but who shall I say called?" He never smiled again. This was too cruel.

THE UNITED STATES NAVY.—"Commodore," said Secretary Chandler to Commodore Walker last Monday morning, "how many boats have we in the navy?"

"Four," replied the Commodore.

"What kind are they?" inquired the Secretary.

"We have a canoe that is being repaired; a batteau, which is also being repaired; a skiff in good condition; and a dug-out that has four holes in the bottom."

"How many guns do they carry?" continued the strong man of the Cabinet.

"How many what?" repeated Commodore Walker.

"Guns," said the Secretary.

"Guns, guns—why, what are guns?" queried the officer.

"Things that are loaded and go off," replied Mr. Chandler.

"Well, Mr. Secretary," said Commodore Walker, with a puzzled expression, "the only things I know of in the navy that get loaded and go off are the officers."

Secretary Chandler discontinued the conversation.—*Washington Hatchet*.

PLENTY OF ROOM AT THE TOP.—"It's no wonder Ohio raises so many great men said a passenger from Buckeyedom. "I used to teach school in Butler County, and one day a director came to me and said: 'Now, Mr. Jones, we want to make something out of our boys; we want 'em encouraged to try to rise in life. Point out to 'em the great possibilities there are for even poor boys. Tell 'em, in the language of Daniel Webster, there's always room at the top.' I promised and did as I agreed. It was wonderful to see the effect it had on the boys. I was sure they would rise in the world if they only had half a chance. And my predictions have been verified."

"Tell us how they turned out, won't you?"

"Well, Tommy Jefferson Smith inherited his father's farm, speculated, made money, went to New York and made quite a stir in Wall street. Now he's keeping a lemonade stand on Mount Washington. Jimmy Buchanan Cook always wanted to be a statesman, and so he went to Washington. The last I heard of him he had a job carrying mortar to the top of Washington Monument. Andrew Jackson Murphy had an ambition to be a big manufacturer, and he went to New York too. His wife takes in washing to support him and dries her clothes on the roof of a ten-story New York tenement house. Sammy Adams Brown went West to deal in stock, got caught in one of his transactions, and was hanged at the end of a telegraph pole. And there was Charley Foster Fosdyke—what became of him? Let me see—oh, yes; he had an ambition to be a clown in a circus. One day he tried to climb a greased pole, fell from the top and broke his ternal neck. I have always believed that early education has a good deal to do with helping boys to rise in the world."

THE high-school girl's brother told her a new conundrum yesterday. It is this:

"What is the difference between shooting a man and killing a hog?"

The answer was:

"One is assaulting with intent to kill, and the other is killing with intent to salt."

When she met Amy she propounded the conundrum to her, but Amy gave it up.

"Well, I'll tell you," said Mildred, "one is assaulting with intent to deprive of life, and the other is killing with intent to preserve in brine."

And Amy failed to see the point!

THEY have sociables in Iowa where the lady is weighed before entering the dining-room and also directly when she leaves it, and her escort pays fifty cents per pound for the increase in her weight. This calls to mind the old story of the western railroad eating house which adopted the same plan. One summer day a shrewd drummer prepared himself for the meal by filling his coat pockets with stones. He was weighed and seated himself at the table near the open window, where he managed to throw the stones away without being observed. When he was weighed and came to settle up it was discovered that the house owed him \$3.75.

A CHICAGO man, who seemed lying in the throes of death, said to his wife:

"I believe I would like to be cremated."

"I don't think you can be," she said, with tears rolling down her cheeks.

A week later, when he was getting better, the Chicago man said:

"What made you believe I could not be cremated, Jane?"

"The crematory could never reduce your cheek to ashes, dear. They cannot cremate brass, iron and metals, you know."

"That's a fact," he replied, "I had not thought of that."

MR. B.—These biscuits remind me of mother's.

Mrs. B.—Well, I declare. Have you gone crazy?

Mr. B.—Crazy, my dear? Of course not.

Mrs. B.—Well, I never expected to hear you say that any of my cooking resembled your mother's. She was a wonderful cook, I have no doubt, for you have said so a million of times.

Mr. B.—Yes, she certainly was. In fact there was only one dish that she ever failed in.

Mrs. B.—What was that?

Mr. B.—Biscuits.

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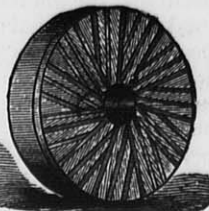
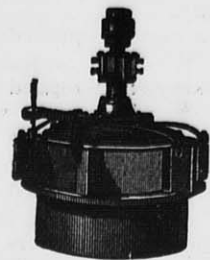
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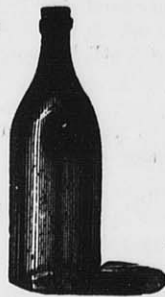
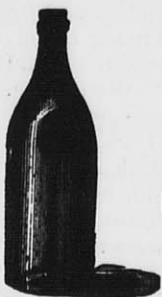
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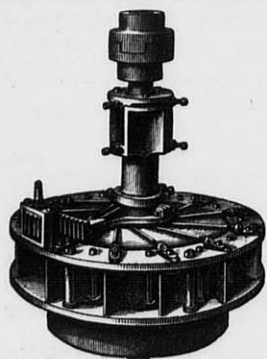
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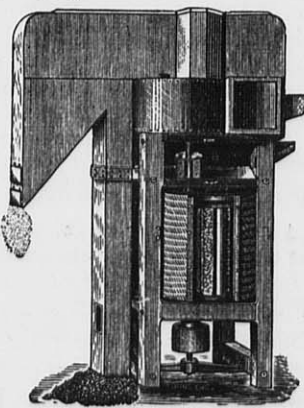
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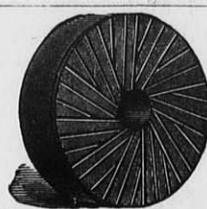
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From Milwaukee to Stevens Point,
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F. N. FINNEY, JAS. PARKER,
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FOURTH ANNUAL PICNIC OF THE MINNEAPOLIS MILLERS.

The crowning event of the season so far at Minneapolis occurred June 21, when the operative millers, with their wives and children and sweethearts, met at the depot for an excursion to Lake Minnetonka, and a day's fun. The excursion was gotten up under the auspices of the Head Millers' Association of Minneapolis, and every one who is in the slightest way connected with the milling interest in the city was invited to attend. All the mills in Minneapolis were shut down in honor of the event.

Three passenger trains, thirty-nine coaches in all, conveyed the excursionists to the lake. There were at least 2,500 people aboard, and many came out on the afternoon train who were unable to be present in the morning. The trains reached the Lafayette without accident. Danz's band was in attendance and played some inspiring airs as the people alighted from the train. The Lafayette orchestra also played a welcoming air. Among the excursionists were to be seen several of the most prominent millers of Minneapolis, Ex-Gov. John S. Pillsbury, Mayor Pillsbury, Fred. Pillsbury, John Crosby, C. M. Hardenburg, Loren Fletcher, A. M. Hubbard, W. F. Cahill being of this number. There were millers, packers, coopers, mill furnishers, and a great number of women and children.

The Milling press was represented by W. C. Edgar, of *The Northwestern Miller*, T. E. Hale of *The Millstone*, and E. Harrison Cawker, of the UNITED STATES MILLER.

Assembling on the veranda of the hotel, Mr. Charles McC. Reeve of Minneapolis, the orator of the occasion, was introduced by the president of the association, Hon. Matthew Walsh, in a neat address. After a short and witty introduction in which he modestly claimed not to know anything about milling, Mr. Reeve continued as follows:

I will call your attention, ladies and gentlemen, for a few moments to the marvelous progress made during the past few years in that magnificent industry over which these head millers preside; a progress which in results surpasses the wonders evoked by the fabled lamp of Aladdin, and which has brought to the coffers of the Minneapolis millers riches exceeding the storied millions of Sinbad the Sailor. If you will gaze for a moment on the emaciated visage and tottering form of the venerable president of this association, it will not require much stretch of the imagination to believe that he is the oldest head miller in the Falls. His career of usefulness dates back to 1885 to when he did the brain work for the old Cataract mill, four run of stone, 150 barrels daily capacity. The total capacity of the mills at that time was 400 barrels per day, and they manufactured but one grade of flour—a straight brand somewhat inferior to the present bakers'. The middlings were sold for pig feed, and the bran spouted into the river. And from this time, I am informed, arose the first complaint from our friends down the river that the Minneapolis mills were obstructing navigation by spouting sawdust into the river; and from that day to this they have never been able to tell the difference. In 1887 the Washburn "B" was built. It was a proud day for Minneapolis when its machinery was first set in motion and its eleven run of stone ground out 700 barrels of flour. The news was flashed far and wide over the country that Minneapolis possessed the largest flour mill in America; and I have it from a most reliable source that one of the honored members of this association gave up a lucrative position in another mill and worked as roustabout in the Washburn, for the mere sake of saying that he worked in the biggest flouring mill in the United States. So matters ran along until 1872, when E. U. La Croix, a Frenchman, invented a middlings purifier, which was first tried in the Washburn C. It was a crude affair, without conveyor or mechanical device for cleaning the cloth, but it was a success, and almost immediately it was in the Cataract, Zenith and the old Taylor mill, which stood on the site of the Pillsbury B. La Croix afterward invented a conveyor, and George H. Christian and George T. Smith further modified and perfected the purifiers, until it was substantially as used to-day, although some minor improvements have since been made. At least seventy men have claimed the invention of the middlings purifier. But I guess that to La Croix belongs the honor and credit of one of the greatest inventions of this inventive age. And now appeared in the markets of the world

MINNESOTA PATENT FLOUR

manufactured largely from cattle feed. But it was good for all that, good enough to eat, and the mills could not supply the demand. How to make a larger per cent. of patent flour was the question. Then some far-sighted millers tried the Hungarian roller process in the Washburn "A." After some few discouragements, the rolls proved to be especially adapted for the handling of hard Minnesota wheat, on the principle of gradual reduction, obtaining the largest possible percentage of high grade flour. So vast has been the improvement in the quality of the flour by the use of rolls that the straight flour of to-day is equal to, if not better than, the best patent of 1872. Is it to be wondered at, in view of these rapid strides towards perfection, that the product of our mills has increased from 400 barrels per day in 1885 to 25,000 per day in 1884, consuming 120,000 bushels of wheat daily, and requiring 300 cars to move the daily product? And during all these years, day in and day out, in summer's heat and winter's snow, in the glare of noonday and the quiet watches of the night, have the dusty millers with unflagging interest and ceaseless care watched the machinery as it moved, noting defects, correcting errors, constantly suggesting changes and furnishing the ideas and groundwork for those improvements, the mechanical details of which have been worked out, perfected and, I grieve to say, patented, and the proceeds pocketed by men almost as ignorant of milling as myself.

And now, in conclusion, a few words concerning the organization under whose auspices we meet to-day. Its existence dates back two years, and it comprises the head millers of the city, twenty-two in

number, as active members, while a number of ex-head millers are honorary members. Its object is the advancement of the science of milling, combined with social and benevolent features. But all questions of business and the relation of employer and employee are rigidly excluded. And it is eminently proper that such an organization should exist here, for here has been the school from which have graduated men of unsurpassed attainments as head millers, and among them James McDaniels and Charles Holt, those head millers in the two largest flour mills of the world. As Athens was the seat of all learning and culture 2,000 years ago, so to-day is Minneapolis the center of all the most advanced ideas concerning the great industry which is the pride and boast of the Northwest. With that sagacity which is one of the prime causes of their success, the mill owners of this city, but their liberal compensation of the head millers, have fostered and encouraged that spirit of inquiry which has resulted in the gratifying and world-wide reputation enjoyed by Minneapolis flour, a reputation which no other locality has been able to equal, although supplied with the same wheat and the same machinery for grinding it. But while the Head Millers' Association has for its object mutual improvement and scientific advancement, their efforts are now directed toward the accomplishment of a kindlier and more sacred end. No monument marks the spot where the brave men who on that fatal 2d of May, 1878, were ushered without a moment's warning into the presence of their maker. And so this association propose by means of these excursions and such other means as lie in their power, to raise funds sufficient for the erection of a monument in Lakewood to the memory of their departed comrades and co-workers. Their best effort they will bend in this direction, feeling doubly sure that their friends in Minneapolis will not fail to respond nobly when called on to do in behalf of such an object. To-day is a day of pleasure, friends all unite to make it a day for memory to cherish, an oasis in the dreary desert of hard toil, a day whose happiness shall have no alloy.

MAYOR PILLSBURY'S REMARKS.

Mayor George A. Pillsbury was loudly called for, and responding to the invitation of the president, said he did not know why he should be asked to speak at a head millers' picnic, unless it was because his name stood at the head of the milling company which he represented. He was not a head miller, and perhaps did not know as much as he should about that part of the business. He was glad the millers of Minneapolis had this opportunity to come out with their wives and children and enjoy themselves at Minnetonka, and he hoped they would all have a gloriously good time. He could speak for the rest of the mill owners, that they were very glad to shut down their mills and give an opportunity for this demonstration. He was glad to say that Minneapolis now stands at the head of the flour industry of the world. Not only does it yield the most and the best flour, but the means of transportation are such that only one other city—Buda Pesth, Hungary—can compete with it. There is reason to be proud of the three great mills of Minneapolis—the Washburn, the Crown Roller and the Pillsbury "A"—which yield more flour than any other three in the world. Much of this success the speaker ascribed to the sagacity and faithfulness of the head millers. Mayor Pillsbury's remarks were enthusiastically applauded.

THE DAY'S PLEASURES.

After the speeches the excursionists scattered about the premises according to their individual inclinations. A game of base ball was played in the rear of the hotel between nines from the Washburn and Pillsbury mills, resulting in a score of 17 to 7 in favor of the latter. There was also dancing in the pavilion. Most of the party had brought their own dinners, and not the least interesting feature of the day was the basket picnic, which was enjoyed under the trees to the left of the hotel, and in the pavilion. The Belle of Minnetonka made frequent trips, and most of those present availed themselves of this opportunity to take a ride on the steamboat some time in the day. The steamer City of St. Louis made her first trip for the season, and carried a full load of passengers. At 2 o'clock a sack race of 100 feet, between head millers was called. James McDaniels, Charles G. Hoyt, Matt. Walsh, Thomas Scott, James Tam, Fred Zimmerman, Tree Stevens, C. N. Wright, T. A. Baker, Thomas Cant, E. Stahler, John Davis, H. Bidwell, John Kraft, William Helforth and William Lockerbie were the contestants. The signal was given and the men in sacks plunged forward, but most of them rolled on the greensward before the goal was reached. Matt. Walsh, president of the association, took the first honors, Thomas Scott second, James Tam third, and E. Stahler fourth. Next followed the packers' foot race, 300 feet; prizes by the *Northwestern Miller* of \$7, \$5 and \$3. The starters were C. O. Bader, P. N. Carozze, M. O'Meara, Patsey McNamara, Frank Kugler, Thomas Scott, C. Thayer, John Zimmerman and Angus Chism. Chism took the first prize, O'Meara second, Carozze third. Time 12½ seconds. The entries for the tub race were W. Buckham, Northwestern mill; W. Halliday, Zenith; F. E. Hardenburg, Crown Roller; Wallace Mitchell, Galaxy; Owen Agnew, Humboldt; Charles Agnew, Anchor; L. Magison, Pettit; Charles Orrington, Washburn "A"; Joe Hall, Washburn "B"; John Dahl, Washburn "C"; S. P. Madden, Standard. F. E. Hardenburg

took the first prize of \$10, and John Dahl the second of \$5.

The day passed off harmoniously. The excursionists took the train for Minneapolis at 5.30, where they arrived without accident.

You tell us that we are cramped and crippled because we do not enjoy the blessings of free trade; that we should throw away our own market, which is a good one, in the vain quest of foreign markets now sadly overcrowded. Let us briefly consider that for a moment. England has 40,000,000 of cotton spindles; this country has 12,000,000. Of the 40,000,000 of spindles of England at least 28,000,000, are running at a loss, 2,000,000 have stopped, 8,000,000 of the remaining 10,000,000 may possibly be holding their own. Of this balance a few of the newer mills are possibly turning a profit, although their markets, which are the markets of the world, are glutted and overburdened. This is no matter of fancy. Every trade report, every commercial paper, the dispatches of every day, announce it. Depression exists all over the world unparalleled, vastly greater than with us. The metal industries of England are no better off. Scores of furnaces in Wales are blown out, waiting customers for their iron. The silk industries of England are waning; her operatives are striking on every hand. She is suffering from great depression, much greater than exists in this country; yet she has free trade. You ask us to abandon our markets to the competition of English pauper labor in exchange for markets already overcrowded, to compete in which our labor must be reduced to their level.—*Extract from Speech by Hon. Jonathan Chase.*

NEWS.

Isaac Otis wants to sell his 3-run mill, at Garden City, Minn.

The Farmers Elevator Co., at Moorhead, Minn., has been incorporated.

Haynes Bros., of Shell Rock, Ia., offer their 4-run water-power mill for sale.

BURNED.—June 5, the Beloit, Iowa flour-mills. Loss \$20,000. No insurance.

Mr. F. S. Hoag is contemplating the erection of a flour-mill at Kirkville, Mo.

Hayworth's flouring-mill at Winemac, Ind., was burned on June 4. Loss \$3,000; insurance \$2,500.

Charles Barnes' flouring-mill at Clay Centre, Kans., burned June 1. Loss \$40,000. Insurance \$17,500.

Frank Nicollin's Sand Creek mill, at Jordan, Minn., burned May 25. Loss on mill and stock \$55,000. Insurance \$42,000.

The elevator at Dakota, Ill., belonging to Jacob Williams, grain dealer, etc., Freeport, Ill., has been burned out.

The Whitehall Mill Co., at Whitehall, Wis., have concluded to offer their 5-run water-power custom and merchant mill for sale.

BURNED.—The oat-meal mill, owned by the Galt Milling Co., Galt, Ont., June 4. Cause unknown. Loss covered by insurance.

Herman Berkholz, proprietor of the "City Mill," at Rock Rapids, Ia., has been poisoned by some one. His wife is suspected.

BURNED.—June 9, the Grove City Mill at Litchfield, Minn. Mill was owned by C. E. Lindburg, and operated by A. P. Stark & Co.

THE AMERICAN OAK LEATHER CO., of Cincinnati, O., are rebuilding on a larger scale than ever. They have already started up some of their new machinery.

One hundred and fifty millions of eggs were imported into this country during the year ending June 1, 1884. Canada sent us \$1,200,000 worth of eggs in 1882.

The grist-mill and grain and hay store of W. Rieppe, at Charleston, S. C., on the north side of George street, was destroyed by fire on June 1. Loss \$4,000; covered by insurance.

Cain, Hanthorne & Co's new 250-barrel, steam-power flouring-mill at Atchison, Kan., has started up and gives entire satisfaction to all concerned. Nordyke & Marmon Co., took the contract.

"The Milwaukee Dust Collector Mfg. Co. have recently fitted up Saxton & Thompson's large mill at Lockport, N. Y., and also Geo. T. Chester's mill of the same place with a full line of their Dust Collectors."

The new "Novelty Flouring Mill," at Rockport, Ind., owned by L. A. Niblack, has just been completed and is now running nicely. It is driven by steam power and has a daily capacity of 120 barrels. The contract for building this mill was awarded to W. T. Pyne, of Louisville, Ky.

Stark's grist-mill, at Paisley, Canada, was burned to the ground on June 2. Nothing but a small quantity of flour was saved. About 10,000 bushels of wheat was destroyed. Loss at least \$20,000. The building and machinery was insured for \$17,000.

An order was received by E. P. Allis & Co., from the Lanier Mill Co., Nashville, Tenn., for regrinding and recorugating thirty-eight rolls. Messrs. Allis & Co., have large facilities in this line, and can fill all orders for this work with the utmost dispatch.

The Beloit Mills, near Canton, Dak., comprising one large, four-story grist-mill and one woolen-mill, were destroyed by fire on June 5. The fire was of incendiary origin. Loss \$20,000, with no insurance. The property is situated two miles below Canton, on the Iowa side of the river.

D. Narracong, of Evansville, has given his order for a complete mill, with eight pairs of rolls, to the Case Mfg. Co.; J. R. Gebhart & Son have ordered two more pairs of Case rolls, and Johnson & Toland of Vermont, Ill., have ordered four pairs Case rolls, a No. 1 double purifier, and Case centrifugal.

The Cummer Engine Co., have just furnished a 225 horse-power engine to the Amoskeag Mfg. Co., of Manchester, N. H., and a 87 H. P. engine to Messrs. Stultz & Kile, of Orwell, O. Orders have recently been received for a 55 H. P. engine, with complete outfit, from Messrs. Todd & Horsford Eugene, Ind.;

one of 35 H. P. for Carlton, Foster & Co., Oshkosh, Wis., and a 55 H. P. outfit complete for A. Dietly & Son, Moorheadville, Pa. The Cummer Engine Co. are also meeting with great success in introducing their Ballentine ice and refrigerating machines in breweries, packing-houses, etc.

Salt manufacturing in Michigan depends almost entirely upon sawdust and refuse slabs. Representative Horr testified before the Ways and Means Committee, that but for the refuse of the lumber mills used for fuel, which cost nothing, not a pound of salt could be made in Michigan.

The Geo. T. Smith Middlings Purifier Co., of Jackson, Mich., have recently purchased the patents owned by the La Croix Purifier Co., of Indianapolis, Ind. The number of purifier patents now owned by the Smith Co., is very large. The business of the company in both purifiers and centrifugals is constantly growing and is now immense.

The following well-known millers lately sent in their orders for the Cone Shape Becker Wh-att Brush, made by the Eureka Mfg. Co., of Rock Falls, Ill.: Ashland Mill Co., Ashland Mo.; Sessinghaus Mill Co., St. Louis, Mo.; Fremont Milling Co., Fremont, Neb.; G. Forston, Lawrenceburg, Ky.; L. M. Jackson, Nicholasville, Ohio; M. P. Bewley, Fort Worth, Tex.; J. H. Danielson, Fresno, Cal.; W. J. Miller & Co., Dublin, Tex.

Among the late orders of the Case Mfg. Co., are those of Thos. Bradford & Co., Cincinnati, O., for two "Little Giant" break machines; five pairs rolls, centrifugals, scalpels, etc., for R. T. Allen, Fond du Lac, Wis., and from the W. P. Huffman Implement Co., at Fort Worth, Tex., for four pairs rolls, a No. 1 Double purifier, a No. 2 single purifier, and Case centrifugal.

The Great Western Stove Works, Leavenworth, Kan., are building an additional foundry of brick, 75x135 feet, with mounting shops attached, 75x75 feet, and brick engine-house, 30x30 feet, which will also accommodate boiler and blower. The new mounting shop will be supplied with drills, lathes, emery grinders, etc. They already have a capacity of 3,000 stoves a year, which will be nearly doubled.

Mr. Louis Gathman, president of The Garden City Mill Furnishing Co., of Chicago, has recently been granted a milling process patent in which he claims as follows: "Splitting and dividing lobated grain through the crease and decorticating the half-kernels, then separating the impurities from the half-kernels, then reducing the half-kernels, and afterward separating the inner bran-flm from the product of reduction, whereby a large percentage of pure food substance is produced."

D. L. Wing & Co., owners of the Planet Flouring mills at Litchfield, Ill., are embarrassed. Their indebtedness is thought to be about \$150,000. The mill property cost \$400,000, and has a bonded debt of \$225,000. There is also said to be considerable wheat and flour in the way of assets. Wing's trouble grew out of an attempt to do very large business on inadequate capital. He has been building a railroad between Litchfield and East St. Louis, which is said to have crippled him greatly.

Among Indian flour contracts awarded at New York June 3, were the following: C. H. Searing, 1,241,500 lbs. at \$2.04 per cwt., Kansas City; W. W. Sheafe, 300,000 lbs. at \$2.07, Sioux City; A. C. Davis, 1,022,500 lbs., to be delivered at prices ranging from \$2.65 @ 2.75, at Cheyenne, Standing Rock, and other agencies; T. C. Power, 500,000 lbs. at \$3.32, at Fort Peck agency, Mont., and 175,000 lbs. at \$2.65, at Brainerd, Minn.; and W. S. Maxwell, 750,000 lbs. at \$3.83½, San Carlos agency. A. Keyes is to deliver 40,000 lbs. of hard bread at Yankton for \$12.44 a hundred weight.

The Case Mfg. Co. have recently received an order from Deaninger Bros., of Adrian, Mich., for their new mill at Morencie, Mich., after using the Case system for 18 months. Their last order is for a full gradual reduction mill with 10 pairs of rolls. This second large order from the same firm shows that they are pleased with the Case system. Two pairs of rolls with automatic feed have been ordered from the Case Co., by E. M. Newton, of Adam's station, Kan., also six pairs to J. B. Ficklin, Fredericksburg, Va.

Milwaukee courts have had the famous Wells-McGeoch case before them during the past month. June 20, Judge Hamilton, of the Circuit Court, rendered a decision on the defendant's motion to have portions of the complaint filed by Wells stricken out and the pleading otherwise amended. The court denied the motion as to some portions of the complaint and granted it as to others. Among the portions to be stricken out are several allegations of threats of financial ruin and personal violence, and promises of large profits, etc., made by McGeoch to Wells. The victory is not a decisive one for either party.

Another manufacturing establishment is to be located in the city, says the La Crosse, Wis., *Chronicle*. It is a cracker factory, and can hardly fail to be prosperous from the start. G. R. Montague will erect a building on Front street, 35x90 feet, with two stories and basement, and the cracker man has taken a lease for five years. The latter has gone to Chicago to buy \$5,000 worth of machinery, and as the building is to be ready in sixty days, he will no doubt be able to begin operations by Sept. 1. This institution is not to be rated as to value as an item in the city's business by the number of hands employed, nor by the capital invested. The goods go in all directions and long distances to market and the consumers are everybody. Every package is an advertisement and makes more familiar the name of the city where the article was manufactured. The proprietor of the new industry is said by people who have met him to be a bright business man.

The *Beloit Free Press* of June 11 states that Miss Libbie Simmons, of that place, had a narrow escape from an awful death in the flouring-mill of Houston & Whitford. The foreman, Willard Calkins, was escorting the lady and a party of her relatives through the establishment, when she suddenly cried out: "Oh, I am caught." The foreman, who is a miller of large experience and thoroughly conversant with all the machinery, took in the situation instantly, and realized that unless something was done and done quickly to free the lady from the shaft, death must follow, owing to the position of the shaft and its surroundings. As the mill could not be shut down in time, and the clothing could not be cut loose, the only thing to be done was to let the clothing tear from her body. Acting as quickly as he thought, he told Miss Simmons to throw her arms around him and hold tight, while seizing her firmly he braced himself against the frame work around the shafting. Mrs. Simmons holding on to her sister at the same time, and they waited for the whirling shaft to complete its dangerous work. The trio con-

tested with the power of the water-wheel; it was a struggle for life, but they were successful, for the garments soon parted, and Miss Simmons was released uninjured, but divested entirely of her skirts. The motion of the shaft was not very great but so fast that the whole affair was over in a few seconds, yet it seemed a long time to those interested. As soon as the danger of the terrible ordeal was over, Mr. Calkins notified Mrs. Sherman, who lives on Third street, near the mill, of what had happened, and she supplied the victim of the accident with clothing, and she was conveyed to the residence of Mrs. Jones, on Fourth street. Up to this time the lady bore up bravely under her trial, but here she had sinking spells, from which she soon recovered.

The Case Mfg. Co., have received an order for a 60-barrel mill, for E. Pearce & Co., Shreve, O.

The citizens of Manter, Minn., are anxious to have a flour mill. Anyone wanting a good site should correspond with S. P. Todd, Manter, Minn.

Thos. Robinson & Sons of Rochdale, England, have just placed their order with the Case Mfg. Co., for two pairs of 9x24 rolls, in "Bismarck" frame.

Geo. Zimmerle and others have organized a stock company to erect a 100 barrel mill, at Galesburg, Ill. It will use the new Finch rolls, the inventor of which is J. R. Finch, of Jackson, Mich.

The dam at Millbrook, Mich., gave way on the night of the 20th, and six bridges were carried away by the torrent of water. Several houses were destroyed, and some cattle and swine drowned. No lives were lost.

The water-wheel step in one of the wheels in the Washburn C. at Minneapolis, having been burned out, another was put in its place. The new wheel is a 60 inch "American" made by Stout, Mills & Temple, Dayton, O.

Besides the new 600-barrel flour-mill being erected at Fergus Falls, Minn., by a company of which Hon. Henry G. Page is at the head and with a capital of \$100,000, another mill will also soon be built, upon the George B. Wright water power, thus making five large roller mills at that point.

The Pray Mfg. Co., as Minneapolis, report business good through the Northwest. They have taken the contract for building a 50 barrel roller mill for Hugh Moore, at Mooreton, Dak. The principal part of the work for the new 500 barrel mill at Fergus Falls, Minn., has also been awarded to them.

C. Theis & Sons' mill at Cumberland, O., built two years ago on the Case system, was burned not long since, and the firm have given the Case Co. their order for rebuilding their mill on the same system with a full line of their latest improved machinery. Such orders show that the merit of the Case system are fully appreciated.

An exchange says of the Finch rolls: "They are simply in construction and do their work effectually. The rolls are six inch rolls, one above the other, have adjustable boxes, arrangement for tightening and loosening same, and belt drive. The machine sets on a base and the driving shaft is under it. It is a roll especially adapted to mills of 50 to 200 bbls. capacity, and can be used to advantage in larger mills. The workmanship is first class in every detail.

Among the late orders received by the Case Mfg. Co., of Columbus, O., are the following: A complete outfit of breaks, rolls, purifiers, scalping reels, centrifugals, etc., for Kidwall & Goode, Ellwood, Ind.; three pairs of rolls with patent feed, one No. 1 double purifier and one "Little Giant" break machine, ordered by A. F. Ordway & Son, for mill at Hortonville, Wis.; C. H. Bayman & Son, of Covington, O., order a "Little Giant" break machine and scalper, three pairs rolls with patent feed, and No. 1 purifier; Hammond & Benedict, of Le Grand, Ia., order two pairs rolls with automatic feed, and a No. 2 double purifier; J. H. Hooper & Son, Constantia, O., order one pair rolls, a No. 1 single purifier, and a Case (improved) centrifugal; Morris & Allbaugh, Marysville, O., one pair rolls; Joseph Clark & Co., Ogden City, Utah, three pairs rolls, No. 1 double purifier, 12-reel bolting chest, scalpers, centrifugals, etc.; Hoover & Reasner, Halstead, Kan., three additional pairs of rolls with patent feed, and a 14-reel bolting chest; Henry Beckman, Neligh, Neb., a double No. 1 Case purifier; J. T. Donovan, Lampassal, Tex., a No. 1 single purifier; W. H. Tenney & Son, Georgetown, D. C., two pairs rolls with patent feed; A. Hinman, Perry, Ill., eight pairs rolls, purifiers, scalpers, centrifugals, etc., for a full gradual reduction mill on the Case system; Holmes & Allgood, Rome, Ga., rolls, centrifugals, etc.; A. Comingo, Pleasant Hill, Mo., an improved Case centrifugal; Peter Schertz, Eldorado, Ia., two pairs rolls with patent feed; W. Sellhorn, Boone, Ia., a No. 2 double purifier; Richmond City Mill Works, Richmond, Ind., six pairs rolls and 13 roll-break machines; John Damp, Ashland, Ky., automatic feed for all his roller-mills; H. C. Anesburg, Burlington, Mich., a "Little Giant" break machine; Adam Helfner, Shirley's, Pa., a "Little Giant" break machine and scalper combined, and two pairs of rolls with automatic feed; A. J. Vanmeter, Miami, Mo., orders breaks, rolls, scalpers, etc.; James Jones, Thorold, Ont., three pairs of rolls; A. B. Childs & Co., of London, England, have ordered one No. 1 double, and one No. 2 single purifier, 13 roll break machines, all supplied with Case's automatic feed; Fitzsimmons & Kreider, Jacksonville, Ill., order the Case automatic feed for all their roller-mills, and William Braley of Centerville, Ia., orders two pairs of Case rolls, with patent feed. The Case Manufacturing Co., are running full time, and report trade demands to be constantly increasing.

The following orders for Allis rolls in Gray's noiseless belt frames have been received during the past month by Messrs. Edw. P. Allis & Co., of the Reliance Works, Milwaukee Wis.: Ruffin, McDaniel & Co., Carthage, Mo., 10 pairs rolls, with a complete outfit to remodel their mill to the full roller system; Wm. Farrell, Carlinville, Ill., a complete roller mill, will use twenty pairs rolls; South Lyons Milling Co., Ltd., South Lyons, Mich., a complete roller out-

fit with eleven pairs rolls, also a 12x30 Reynolds' Corliss engine with boiler, etc., for power outfit; Messrs. Rosevelt Bros., Ackley, Ia., eight pairs rolls and other machinery necessary to equip their mill on the roller system; Rosecrans, Wenz & Eckley, Sigourney, Ia., four pairs rolls and a No. 2 four-break machine; Kauffman Milling Co., St. Louis, Mo., a complete roller mill; Schiminke & Reiber, Nebraska City, Neb., a complete roller mill; Elkhorn Mill Co., Booneville, Ind., eight pairs rolls; Levenhagen & Petrie, Mishicott, Wis., five pairs rolls and other special machinery; R. A. Willing, Phelps, N. Y., eight pairs rolls; A. J. Kuhn, Columbia, Tenn., four pairs rolls; E. Middleton & Sons, Greenville, Mich., all the necessary machinery to double the capacity of their present mill, including twenty-six pairs rolls; Akron Milling Co., Akron, O., twenty-six pairs rolls, also all machinery necessary for their new oat-meal and rye mill; A. W. Martin, Hagerstown, Md., twelve pairs rolls; Proctor Taylor, Pontiac Ill., a complete roller mill; through RICHMOND CITY MILL WORKS for Landes Beall & Co., Arkansas City, Kan., six pairs rolls, and for J. G. Bayne & Sons, Bagdad, Ky., ten pairs rolls; D. D. T. Farnsworth, Buckhannon, W. Va., a complete roller mill; through Wolf & Hamaker, Allentown, Pa., twelve pairs rolls for E. Strickler & Bro., Lebanon, Pa.; Samuel Williams, Carthage, Mo., a complete roller mill; Nashville Mill Co., Nashville Tenn., twelve pairs rolls and necessary machinery to double the capacity of their present mill, which will make it from 300 to 350 barrels daily; V. F. Wieser, Otterville, Ia., eight pairs rolls and other machinery necessary to put his mill on the roller system; Lanier Mill Co., Nashville, Tenn., a complete roller mill; Beckley & Phipps, Grove City, Minn., a complete roller mill; through Willford & Northway, Minneapolis, Minn., eight pairs rolls for Iver Pederson, Galesville, Wis.; John Ream, Hagerstown, Md., four pairs rolls; Charles Hopt, Hamburg, Ia., a complete roller mill; Nickerson & Collister, machinery for complete 100-barrel roller mill, including twelve pairs rolls; Bauernfeind & Metzger, Glenbeulah, Wis., four pairs rolls; Peters & Jones, Knoxville, Tenn., three pairs rolls; through Geo. Jarrett, Des Moines, Iowa, a complete roller mill for J. F. Briggs, Hooper, Neb.; through Wolf & Hamaker, Allentown, Pa., a complete roller mill for W. Berninger, Catawissa, Pa.; S. T. Miller, Middletown, Va., ten pairs rolls; John Dwight & Co., New York City, one complete roller mill; W. E. Woodyear, Baltimore, Md., one complete roller mill; L. V. Rathbun, Rochester, N. Y., one complete roller mill; Benj. Charles, Clear Springs, Md., one No. 2 four-break machine and four pairs rolls; J. M. Piazek, Valley Falls, Kan., A. Wegmann, Victoria, porcelain roller mill. In addition to the foregoing, the following orders for the Reynold's Corliss engine, were received during the past month: The Lucy Furnace Co., Pittsburgh, Pa., a patent automatic cut off blowing engine, steam cylinder 42x60, air cylinders, 84x60; Mann Bros., Milwaukee, Wis., an 18x42 engine; the Moore Combination Desk Co., Indianapolis, Ind., a 14x42 engine; the Riverside Printing Co., Milwaukee, Wis., an 8x24 engine; the Union Elevator Co., Kansas City, Mo., an 18x42 engine.

SPECIAL BUSINESS NOTICES

ABOUT THE CURTIS' HELFRICH GRAIN CLEANER.

The following letter has just been received by the manufacturers, and speaks for itself.

Office of Chas. A. Pillsbury & Co.,
June 26.

Curtis & Helfrich, City.
Gentlemen:—"We are using a number of your new Wheat Cleaners, and are well satisfied with them." We consider it a superior scouring machine, especially for cleaning and putting in milling condition, smutty wheat which requires very thorough scouring in order to mill it at all.

Very truly yours,
CHAS. A. PILLSBURY.

MILL COGS AND CONVEYOR FLIGHTS. Cogs to order on shortest possible notice. Large stock of conveyor flights on hand.

N. P. BOWSHER.
South Bend, Ind.

Flint & Pere Marquette R. R.

LUDINGTON ROUTE.

Fast Freight & Passenger Line.

Freight Contracted on through Bills Lading to all points in

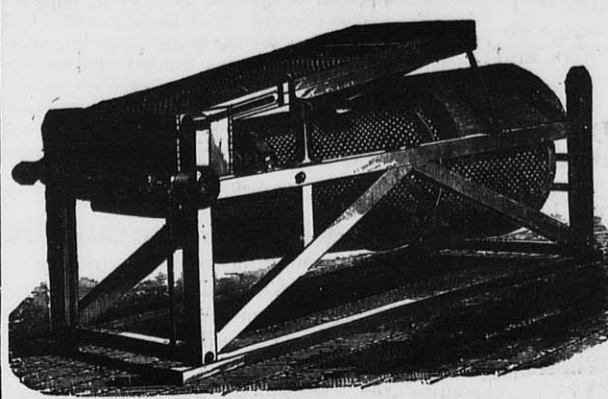
Michigan, Indiana, Ohio,
New York, Pennsylvania,
New England & Canada.
AT LOWEST RATES.

All freight insured across Lake Michigan. Passengers save \$2.75 to all points East. Dock and Offices, No. 24 West Water St., one block from Union Depot.

L. C. WHITNEY,
Gen'l Western Agent.

Cockle Separator Manufacturing Company

MILWAUKEE, WIS.



GENERAL MILL FURNISHERS

MANUFACTURERS OF

Kurth's Improved Patent

COCKLE SEPARATOR,

Built also in combination with Richardson's

Dustless

Wheat Separators.

Large Capacity combined with Good Quality

of Work. Boardman's Patent

GRAIN CLEANERS,

Fully Guaranteed to give the Best of Satisfaction

Pott's Patent Automatic Feeder for Roller

Mills, Purifiers, etc., very simple and cheap.

Perforated Sheet Material at low prices. Send for Circulars and Catalogues.

MOORE'S UNIVERSAL ASSISTANT

and Complete Mechanic

Contains 1016 Pages, 500 Engravings, and over 1,000,000 Industrial Facts, Calculations, Receipts, Processes, Trade Secrets &c., in every business.

For sterling Value, Elegance, and Low Cost, this Work has no Competitor in the English Language. What Others Say:—"A regular condensed Universal Encyclopedia containing processes, rules, &c. in over 200 different trades and occupations with Tables for all possible calculations."—"MANUFACTURER AND BUSINESS."—"A COMPLETE TREATISE on the different subjects."—"SCIENTIFIC AMERICAN."—"The information given is worth ten times its cost."—"ED. WEST M.F.R."—"Should have a place on the shelf in every library."—"CAN. MECHANIC."—"The 'UNIVERSAL ASSISTANT' is a reference library in itself."—"AMERICAN GROCER."—"Contains information on almost every subject under the sun."—"GRANGE VISITOR."—"It is crammed full of solid information on all the practical affairs of life."—"WEST FARMER."—"Is of itself an ample, pleasing and useful study for the whole winter."—"MD. FARMER."—"A reliable work, would willingly pay \$10 for it if necessary."—"H. DINNIN."—"Gives information of great value to every Engineer, Mechanic and Artisan."—"AM. MILLER."

"This may be called the Book of Wonders, for it has a compilation of information from all avenues of knowledge. Nowhere else can such a mine of intellectual wealth be found; should be in every household; certainly in every office and workshop."—"KANSAS CITY TIMES."

"We most heartily commend the 'UNIVERSAL ASSISTANT AND COMPLETE MECHANIC' as well nigh indispensable to any Miller, Farmer or business man."—"LESTER'S NEWS."—"The most complete and valuable of any work of its kind we have ever seen."—"AM. MACHINIST."—"The 'COMPLETE MECHANIC' is the best and cheapest work of its class published."—"FREDERICK KEFFY, Engineer. Sample Copy by mail for \$2.50."

A new and Revised Edition of this Invaluable Work has just been issued, containing a complete Index, which increases its value ten fold. It is really a \$10.00 book for \$2.50. Price in Cloth binding, \$2.50. We will send the above book post paid, and a copy of the UNITED STATES MILLER for one year, for \$2.75, to any address in the United States or Dominion of Canada. Address all orders to E. HARRISON CAWKEH, publisher, Nos. 116 and 118 Grand Avenue, Milwaukee, Wis.

Good Opportunity TO PURCHASE A MILL.

ASSIGNEE'S SALE OF FLOUR MILL PROPERTY.

Pursuant to authority and order of sale duly given by the Probate Court of Gallia County, Ohio, in the matter of the assignment of Lawson, Bell & Co., the undersigned, as their Assignee, will offer for public sale at public outcry, at the front door of the Court-house, in Gallipolis, Ohio, on WEDNESDAY,

July 16, A. D., 1884,

at two o'clock, P. M., and then and there sell, at not less than two-thirds the appraised value thereof, upon the terms below stated, the real estate namely: The whole of city lot number one hundred and twenty-nine (129), in the city of Gallipolis, and three (3) feet off of city lot number one hundred and forty-five (145), in said city, which three feet is immediately in the rear of said lot No. 129, the full length of the width of said lot No. 129, together with the flour mill, engines, boilers, milling apparatus attached, and all the machinery affixed and buildings thereon, belonging and appertaining with the appurtenances.

TERMS: Said real estate will be sold free from mortgage liens, and free from contingent dower of Almira F. Lawson and of Ellen Bell, and upon one-third cash down, one-third in one year and one-third in two years from the day of sale; the deferred instalments to bear eight per cent. per annum interest from day of sale, payable annually, and to be secured by mortgage on the premises, and by insurance in a responsible insurance company on the flour mill, against loss by fire, in a sum not less than the deferred instalments and the interest, for the benefit of the assignee or his assigns. The purchaser to pay the taxes payable after June, 1884.

GEORGE HOUSE,
Assignee.

REMARKS: This is a new mill, three stories high, of brick, containing fine machinery, including six double roller machines, of a standard make, and three run of stone. Daily capacity, 150 barrels of flour. Inspection solicited.

See Page 40.

Important Notice to Millers.

THE RICHMOND MILL WORKS, and RICHMOND MILL FURNISHING WORKS are wholly removed to Indianapolis, Ind., with all the former patterns, tools, and machinery, and those of the firm who formerly built up and established the reputation of this house; Therefore to save delay or miscarriage, all letters intended for this concern should be addressed with care to

NORDYKE & MARION CO.,
INDIANAPOLIS, IND.

Detroit, Grand Haven & Milwaukee RAILWAY LINE.

The Shortest & Cheapest Route

—TO THE—

EAST

New York, Boston, and all points in Michigan.

DAYLIGHT EXCURSION!

Steamer "City of Milwaukee."

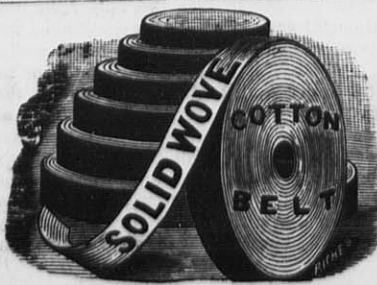
Grand Haven and Return \$1.00

Leaves daily (except Sunday) at 7:00 A. M., and connects with Limited Express. Night Steamers leave daily (except Saturday) at 8:30 P. M., and connect with Steamboat Express.

SLEEPING and PARLOR CARS ON THROUGH TRAINS.

Ticket Offices, 99 Wisconsin Street, at Dock, foot of West Water Street.

B. C. MEDDAUGH, T. TANDY,
West. Pass. Agt. Gen'l Fr't and Pass. Agt.
G. R. NASH, Manager.



MILL SUPPLIES

Leather Cotton Rubber } BELTING, BOLTING CLOTH,

Elevator Buckets, Bolts, Mill Irons, &c.

Prices Close and Quality the Best.

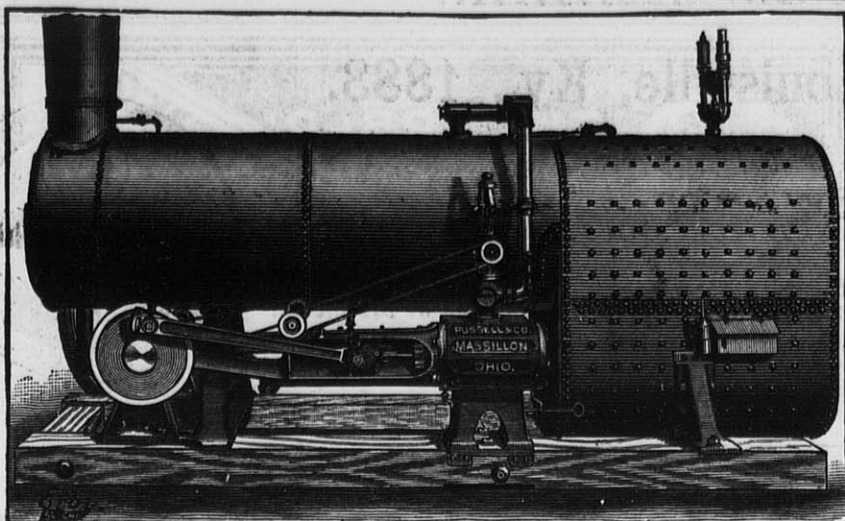
The Case Mfg. Co., Columbus, O.

Rolls Re-Ground

AND RE-CORRUGATED TO ORDER.

Our Machinery for this purpose is very accurate. Can do work promptly.

Case Mfg. Co., Columbus, Ohio.



THE RUSSELL ENGINES. Nine Sizes, Six Styles. More in Preparation. Everywhere considered to be the STANDARD. New Illustrated Catalogue sent free on application. Address, naming this paper. **RUSSELL & CO., Massillon, O.**

BRAN AND MIDDLINGS,
MITCHNER & LYNNE,
Old Corn Exchange, LONDON, ENGLAND.
Are O. I. F. Buyers of the Above.

Established 1856.
THE EUREKA GRAIN CLEANING MACHINERY
18,000 Machines In Use. 18,000 Machines In Use.



European Warehouse and Office:
16 Mark Lane, London, E. C., England.
Gen. Agency for Australian Colonies
and New Zealand.
THOS. TYSON, MELBOURNE, VICTORIA.

Howes & Ewell,
SILVER CREEK, N. Y.

45 LBS. FLOUR.

60 LBS. WHEAT.

The Thayer Manufacturing and Mill Furnishing Co.

Practical Mill Builders of both Buhrs and Rolls, or both combined. Building new and remodeling Buhr mills with all the latest improvements, including Buhr Dressing, new process Bolting, together with the latest improvements in wheat cleaning. GUARANTEEING RESULTS.

Manufacturers of
THAYER'S
COMMON SENSE THREE REEL
BOLT.
Without Conveyors.

Runs with one-half the power of ordinary Bolts.
Correspondence solicited.

Also Manufacturers of
THAYER'S PNEUMATIC MIDDLINGS
PURIFIER

Adapted to all systems of milling, has many advantages over all other Purifiers in making a complete separation of the fine from the coarse middlings by controllable air currents, purifying separately on the same machine, handling middlings without granulation, occupies less space, runs with less power, requires less attention, is made more durable, and is less liable to get out of repair than any other purifier made. For 1884 Catalogue, Prices, etc., address,

Thayer Manufacturing & Mill Furnishing Co.,
Westerville, Franklin Co., O.

[Please mention the UNITED STATES MILLER when you write to us.]



Alcott's Improved Turbine.

This Wheel is considered one of the most correct that has been devised, gives the highest results, and, with late improvements, is now the best, most practical, and efficient Partial Gate Wheel in existence.

For Economy, Strength, Simplicity, Durability, and Tightness of Gate, it has no equal.

State your requirements, and send for Catalogue to

T. C. Alcott & Son,

MOUNT HOLLY, N. J.

[Please mention this paper when you write to us.]

WALKER BROS. & CO.,

FLOUR AND GRAIN

Commission Merchants

TRINITY SQUARE,

LONDON, E. C., - ENGLAND.

STEEL
CAR
PUSHER

Made entirely of STEEL.
ONE MAN with it can
easily move a loaded car.
Will not slip on ice or
grease.

Manufactured by
E. P. DWIGHT,
Dealer in Railroad Supplies, 407
Library St., Philadelphia, Pa.

[Please mention this paper when you write to us.]

NORDYKE & MARMON CO., INDIANAPOLIS, IND.

BUILDERS FROM THE RAW MATERIAL OF

ROLLER MILLS, CENTRIFUGAL REELS,

Flour Bolts, Scalping Reels, Aspirators, Millstones, Portable Mills,

AND KEEP THE LARGEST STOCK OF

All Kinds of Mill Supplies in the United States.

500 BARREL MILL IN MISSOURI.

READ WHAT AN OLD MILLER, WHO HAS THIRTY-FOUR PAIRS OF THESE ROLLS IN CONSTANT USE, SAYS:

MESSRS. NORDYKE & MARMON CO., INDIANAPOLIS, IND.

Gentlemen:—In regard to the workings of our new mill erected by you, will say it is working fully up to and beyond our expectations. Our average work is fully 33 per cent. over your guarantee. Since starting our mill last July we have had no complaint of our flour from any market where sold. It gives universal satisfaction, and we have it scattered on the trade from Chicago to Galveston, Texas. Our yields are all that are attainable. We have tested it on both Spring and Winter wheats with satisfactory results on both varieties. Since the mill was turned over to us we have not changed a spout or a foot of cloth, nor have we found it required to make any changes. We have run as long as six days and nights without shutting steam off the engine, not having a "choke" or a belt to come off. The mill is entirely satisfactory to us, and for a fine job of workmanship, milling skill and perfection of system, we doubt if it is surpassed in the United States to-day. It is certainly a grand monument to the ability and skill of Col. C. A. Winn, your Milling Engineer and Designer. You may point to this mill with pride and say to competitors, "You may try to equal, but you will never beat it." Wishing you the success that honorable dealing deserves, I am,
Yours, etc.,

OFFICE OF DAVIS & FAUCETT MILLING CO.,
ST. JOSEPH, MO., Nov. 28th, 1883.

R. H. FAUCETT, Prest.

500 BARREL MILL IN ILLINOIS.

MESSRS. NORDYKE & MARMON CO., INDIANAPOLIS, IND.

Gents:—We started up our mill in June last year, and it gives us pleasure to say that your Roller Mills are doing splendid work and give us no trouble. Your milling program required no changes, and concerning yields, we get all the flour from the offals, and we sell our best grades in the principal markets of the United States at the highest prices offered for any flour. All the machinery made by you is first-class, and we would not know where to purchase as good.
Yours respectfully,

OFFICE OF DAVID SUPPIGER & CO.,

HIGHLAND, ILL., Jan. 10, 1884.

DAVID SUPPIGER & CO.

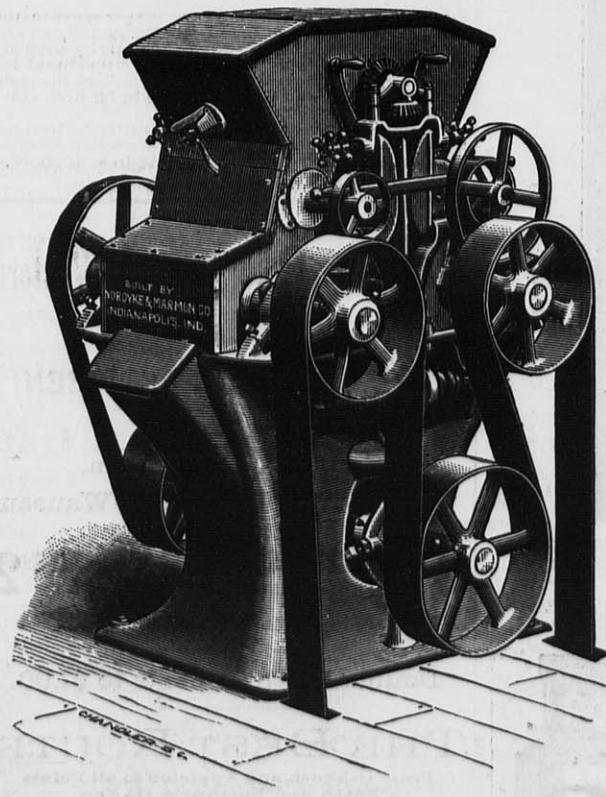
125 BARREL MILL IN INDIANA.

NORDYKE & MARMON CO., INDIANAPOLIS, IND.

Gentlemen:—The 125 barrel All Roller Mill you built us has been running all summer, and does its work perfectly. Before contracting with you for this machinery we visited many Roller Mills throughout the West and Northwest, built by the different leading Mill-furnishers, and from all we could see, those built by you seemed to be giving the best satisfaction, and this is why we bought our machinery of you. Our mill comes fully up to your guarantees, and the capacity runs over your guarantee. The bran and offal is practically free from flour, and our patent and bakers' flour compares favorably with any we have seen elsewhere. I don't think anyone can beat us. Your Roller Machines are the best we have seen; they run cool, and the interior does not sweat, and cause doughing of the flour. Judging from our success, we would recommend other millers to place their orders with you.
Yours truly,

LAPEL, MADISON COUNTY, IND., Jan. 10, 1884.

J. T. FORD.



Letters on file in our office from a large number of small Roller Millers giving as favorable reports as above. A portion will be published as occasion demands.

SPECIAL MILLING DEPARTMENT!

Mill Builders and Contractors—Guarantee Results.

Motive Power and Entire Equipment of a Modern Mill Furnished under one Contract.

Southern Exposition at Louisville, Ky., 1883.

The Board of Directors has confirmed the following report of the Jurors on Awards for the Southern Exposition of 1883, and decreed an award therewith as follows:

REPORT ON AWARDS.

PRODUCT—Roller Mills (Gilbert & Livingston). EXHIBITOR—STOUT, MILLS and TEMPLE, Dayton, Ohio.

AWARD—A Medal for the **BEST ROLLER MILLS.**

The Award as made above is in the hands of the engraver, and will be delivered soon as completed.

J. M. WRIGHT,
General Manager.

Louisville, Nov. 26, 1883.

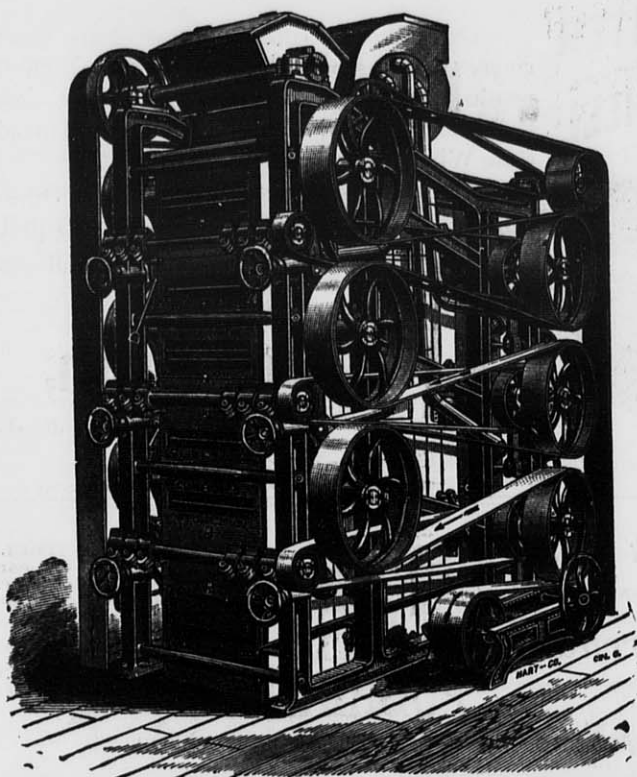
The above is an exact copy of notification of Award sent us. Cuts of Roller Mills referred to.



The Gilbert Combination

The CHAMPIONS!

Acknowledged by ALL USERS and DISINTERESTED JUDGES
to be the Best Combination Mill in the World.



Reduction Roller Mill.

It is used in a Gradual Reduction Mill to make the breaks, and to do the scalping between same, and aspirates the stock after EACH separation. The products from the Mill are Bran for the Duster, and Middlings for the Purifier.

The Livingston Belted Roller Mill

The strongest, simplest, yet most completely adjusted Four-Roller Mill in the market. It can be used for reducing all kinds of grain.

For descriptive circular and price list, call on or address,

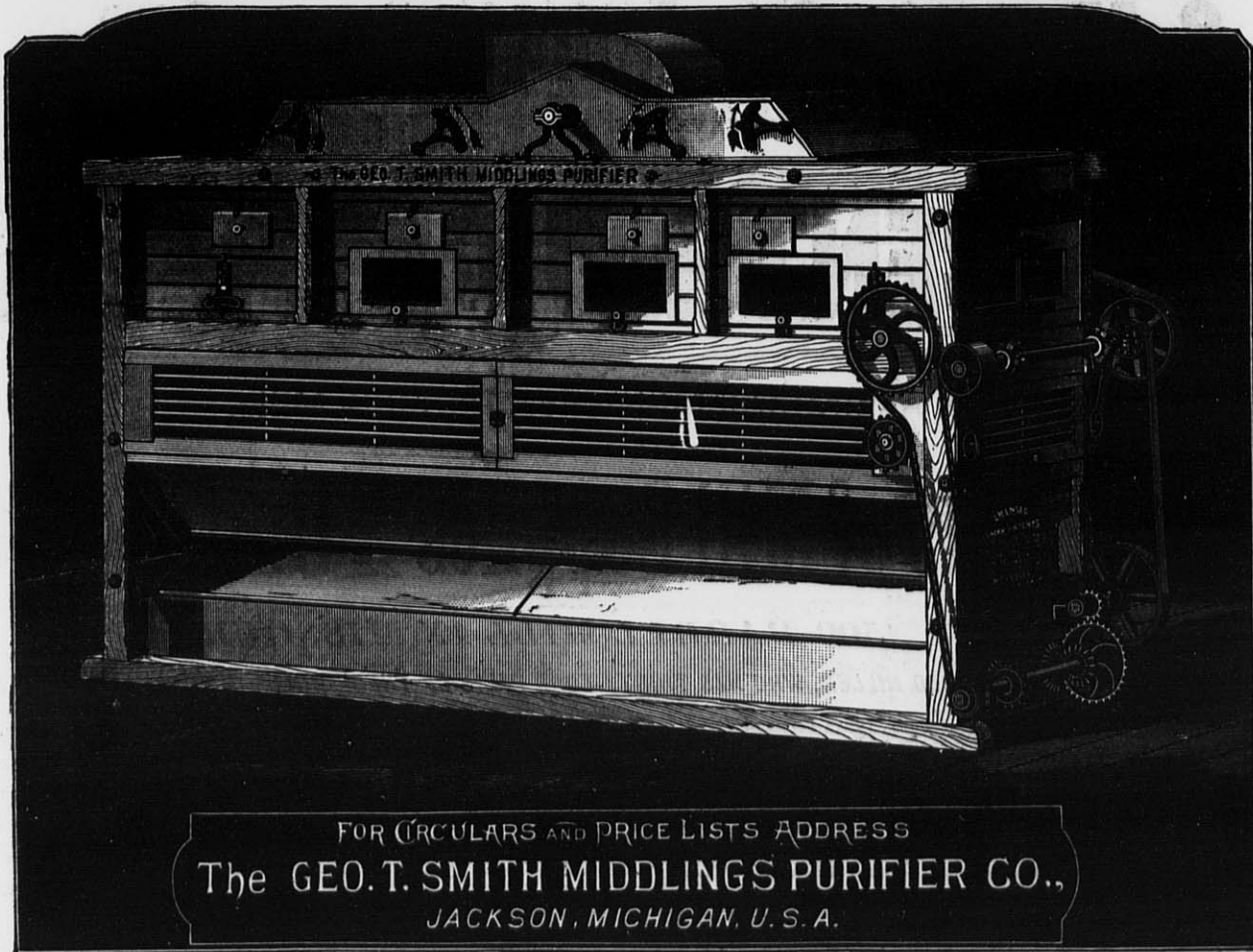
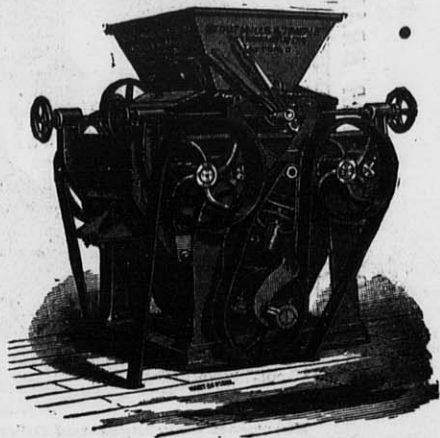
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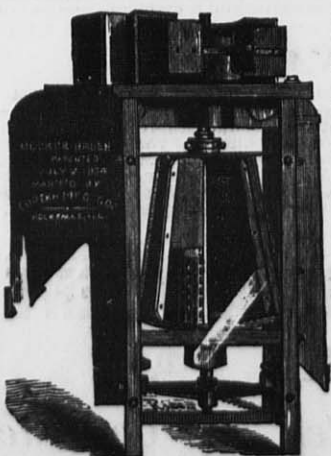
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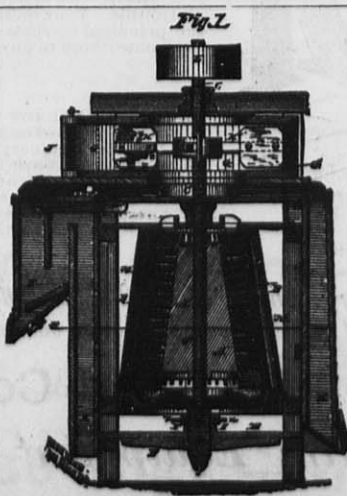
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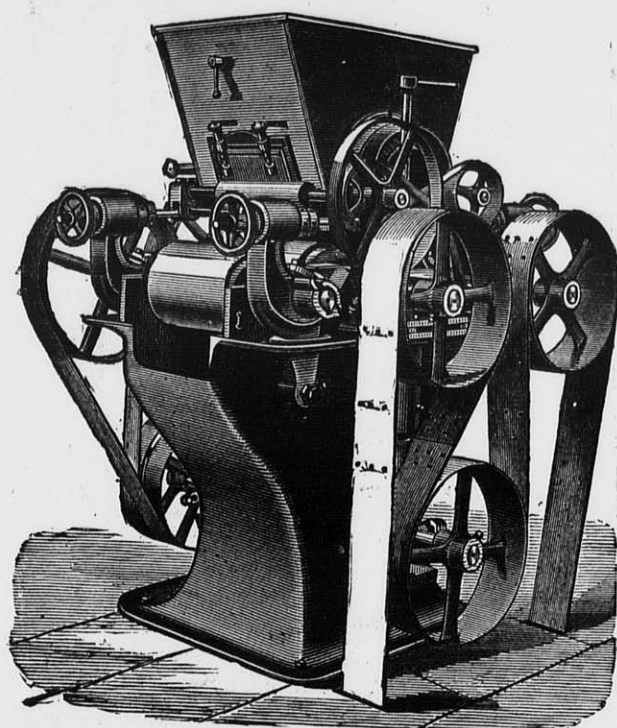
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Our System is THOROUGH and RELIABLE, and our Roller Machine Perfected by Long Experience, and the Miller takes no chances in using them, as HE DOES with the New Fangled Notions of Drive and Adjustment on many other machines now TRYING TO FOLLOW OUR IMPROVEMENTS and still avoid our Patents, in BOTH of which THEY FAIL. We were the first to advocate the Entire Belt Drive, and were opposed by every other maker, who claimed it was not positive, etc., etc., and now that our Belt Drive is an ACKNOWLEDGED SUCCESS, and will SUPERCEDE EVERY OTHER STYLE, these advocates of Gear Drive have suddenly learned that Belts are the Thing. The same may be said of our Spreading Device, Feed Gates, and Adjustable Swing Boxes. Other Makers are now copying these. ALL these Features, including BELT DRIVE with ADJUSTABLE COUNTERSHAFT and TIGHTENER, the SPREADING DEVICE, FEED GATES, Adjustable Swing Boxes and Leveling Devices, Self-Oiling Boxes, etc., are secured to us by several Strong Patents, and we CAUTION MILLERS in regard to these Infringements of Our Patents and Rights, for we shall look to THEM for Redress. The matter is in the hands of our Attorneys, who will soon take VIGOROUS ACTION against the Makers and USERS OF MACHINES infringing Our Patents.

Several machines are already on the market which Broadly Infringe, and we are informed that other makers are now changing their Old Style Machines, and adopting in a large measure Our Improvements. BEWARE OF THEM.

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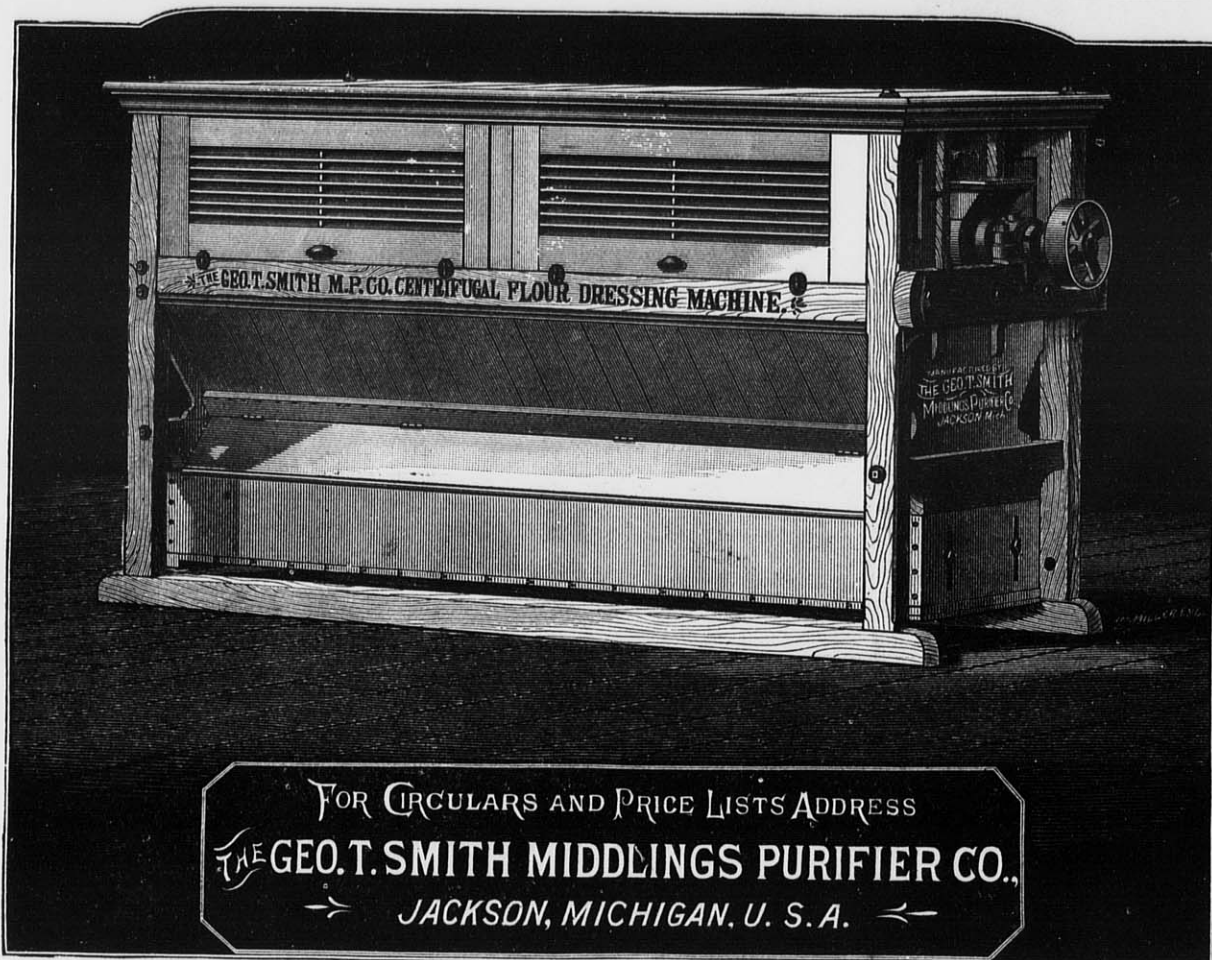
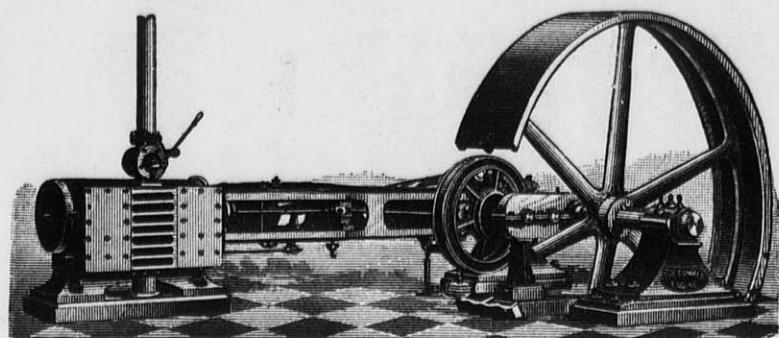
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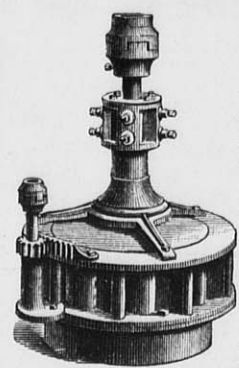
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Messrs. Case Manufacturing Co., Columbus, O.

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GENTLEMEN:--I wish to say to my milling friends that I have the best Roller Mill in this section. It consists of ten pairs of "Case" Rolls, and a full outfit of Purifiers, Centrifugals and Scalping Reels, and other machinery from the same company. I wish to say to parties that are contemplating remodeling or building new mills to see your machinery before purchasing, for the reason that you have the most complete "Flow" of material that I ever saw, and the most substantial machinery in the market. The Automatic Feed on the Rolls and Purifiers is the finest in the world and needs no attention whatever. I will tell you what we are doing with the mill. We are making a bbl. of straight Roller Flour out of $4\frac{2}{3}$ bushels of wheat, and the beauty of the working of the mill is we are only making $\frac{1}{2}$ lb. of Low Grade Flour to the bbl. Our Straight Grade Flour is taking the lead, as will be seen by the signatures of parties that are handling it.

[Signatures omitted here.]

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E. E. CARPENTER, Dover, Cuyahoga Co. O.

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